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MOTOR AGE

Home of Great Britain's Clubmen Grand Monument to Motoring

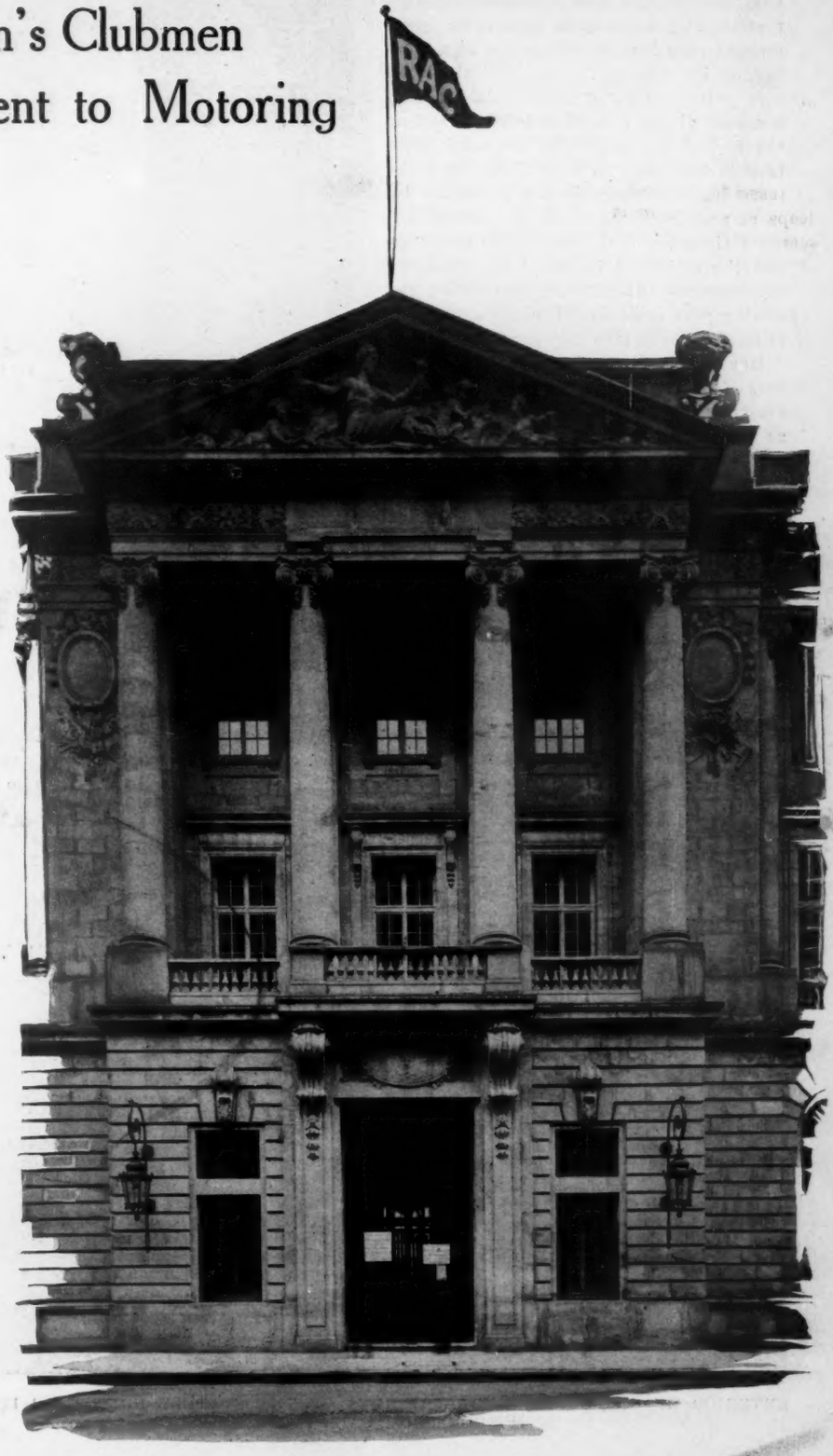
Opening of Magnificent Building by Royal Automobile Club Discloses Edifice Marked by Palatial Features—House Fronts 228 Feet on Pall Mall, London, and Cost $1,250,000—More Than 6,300 Members Will Enjoy Its Privileges—Luxuries Include Swimming Baths, Fencing Room, Squash Racquet Courts, and Other Conveniences

By J. S. Critchley

LONDON, March 24—The opening of the Royal Automobile Club on the site of the old war office in Pall Mall yesterday must be regarded as proof of the advance which the motoring industry has made in Great Britain; and it is almost inconceivable that any new industry could in so short a time attain such wonderful proportions. The Royal Automobile Club, although not boasting of the largest membership of any social club in London, has to date a roster of 6,300 members, which number it is expected will rapidly increase now that the new club house is completed until a waiting list will have to be opened.

Although its membership is not the greatest the club house is not only one of the finest of any of the London club houses, but is believed to be one of the finest and most luxurious club houses in the world. It is specially fitting that such a lasting monument to so young an industry should be erected in the world's metropolis; it is all the more fitting that this should be located in London, when it is remembered that Great Britain offered the greatest obstacles to motoring in its early days by its senseless road laws, in spite of which, however, the industry has forged to the front with phenomenal pace during the last few years.

This palatial home of the members of the Royal Automobile Club simply goes to show that those who have connected themselves with the new mode of locomotion are men of with no conservative ideas. The new



club house is almost as great an advance on anything which has been seen in connection with club life as the new mode of locomotion was over the horse-drawn carriage.

On Club History

The Automobile Club of Great Britain and Ireland was formed in the year 1897, and at the end of that year the total membership numbered only 163. The club house merely consisted of two rooms rented in residential flats, and the first few years of its existence were years of financial anxiety. At one time it almost appeared that the club doors would have to be closed owing to the lack of enthusiasm of a number of its members. The critical period was gotten over by some half a dozen members giving certain guarantees, and at the end of the year 1900 the total membership had risen to 710. Since then the increase in membership has proceeded by leaps and bounds, and at the present moment there are more than 6,300 members, and the estimated income from members' subscriptions and entrance fees during the coming year is no less than $270,000. The initiation fee is $125 and annual dues $65.

However enthusiastic the pioneer members of the club may have been, none could ever have imagined that such a club house as that just opened could be the outcome of the early enterprise.

Ideal City Location

The situation of the club is in the center of clubland, namely, Pall Mall, an ideal position. Two years has been spent in erecting this great undertaking, which has cost $1,250,000. The frontage on Pall Mall is 228 feet, and the building is not only one of the largest, but is also one of the handsomest examples of architecture in the style of Louis XIV.

As a club house it is absolutely unique, and never in this country has such an attempt been made to introduce so many attractive features. For instance, members will be enabled to indulge in the luxury of a private swimming bath, turkish baths, fencing room, squash racquet courts, gymnasium, rifle range and similar conveniences which add to the enjoyment of life.

SMOKING ROOMS WHICH EXTEND FULL WIDTH OF BUILDING AND WHOSE WINDOWS LOOK OUT INTO PALL MALL

The club is of course replete with all the usual accommodations provided by a first class club or hotel, ninety-five bedrooms being provided in addition to private suites, combining bedroom, sitting room and bath room.

The facade in Pall Mall is in Portland stone, and has been treated with massive Ionic columns, the main entrance in the center being well marked in a boldly projecting colonnade with sculptured pediment. The tympanum pediment represents "Science as the Inspiration of the Allied Trades," and was modeled and carved by M. Faivre of Paris. The main cornice, as well as part of the parapet, in accordance with the conditions of the crown lease, had to line with those of the Carlton Club, which condition to a certain extent determined the proportions of the facade, inasmuch as the club required three stories between the entablature and the ground floor level. It may be of interest to architects to mention that the lease stipulated that no part of a building, except the portico and chimneys, should project above a certain defined line inclined to the horizontal over the street, i. e., a line drawn from a point on the building on the opposite side of the street, 5 feet 6 inches above the pavement level, through the nib of the coping to the parapet. The facade at the back, overlooking Carlton gardens, has been treated in the same style, but is of a simpler nature, no carving being introduced, and pilasters being used instead of columns. Both of the facades have been faced with Portland stone from the Whitbed series. The roof is covered with green Westmoreland slates, and the dressings are in copper.

EXTERIOR OF CLUBHOUSE, GIVING AN IDEA OF THE STATELY EDIFICE AS IT IS SEEN FROM PALL MALL

Minor entrances are situated at either end, that is, east and west, and are ornamented by sculpture representing the four elements, "Earth, Air, Fire and Water."

Four Stories and Basement

Correctly speaking, the club house is made up of four stories and the basement, with a fifth floor at the rear of the building for servants' quarters and photographic

ANOTHER VIEW OF THE SMOKING ROOM, SHOWING COMFORTABLE FURNITURE AND BOOKSHELVES

dark rooms, developing rooms, etc. The main floor, as the plans show, consists of a central vestibule with a corridor leading to the right to the club room occupying the entire right end; the corridor leading to the left to the dining room, occupying the entire left end; and the corridor leading straight ahead to the great gallery, a room almost as large as the club room or the dining room.

On the second floor are all of the club offices, including offices for the touring committee, technical committee, legal bureau, engineer's department, as well as cashier and secretary's office. There are some bed rooms on this floor. Undoubtedly the feature room of this floor is the large terrace room finished in Georgian style and overlooking Carlton gardens, St. James park, etc. This room is directly over the great gallery on the main floor.

The third and fourth floors are given over entirely to members' bedrooms, and the fifth floor at the rear of the building only has been planned as servants' quarters and a photographic studio. All told there are ninety-five bedrooms for club members.

The basement serves a multiplicity of uses, among the chief features being the vestibule, the swimming bath, turkish baths, fencing room, three racquet courts, as well as private baths and dressing rooms.

Entrance is Impressive

The main entrance is very impressive. The first thing that one notices are the fine broad iron entrance gates. At the right and left of the main entrance are steps leading to the strangers' and reception rooms, the latter being designated for the use of women visitors, from which folding doors lead to the restaurant. The strangers' room to the right corresponds with the room on the left, and opens into the club smoking room.

The restaurant and the smoking room are very large apartments which occupy or extend the full width of the building, and have windows looking into Pall Mall and also on to the gardens at the rear.

The restaurant of the club is quite an innovation as regards London clubs, and should prove to be one of the most attractive features in connection with the new building, as women will be admitted to it. As the London hotels are compelled to close their doors at 12:30, it is anticipated that this room will be largely used by members who desire to entertain supper parties.

The decorations of this room are in the style of Louis XV and it also contains five pictures by Hubert Robert, which are let into panels around the walls, these pictures having been purchased from an old chateau in France.

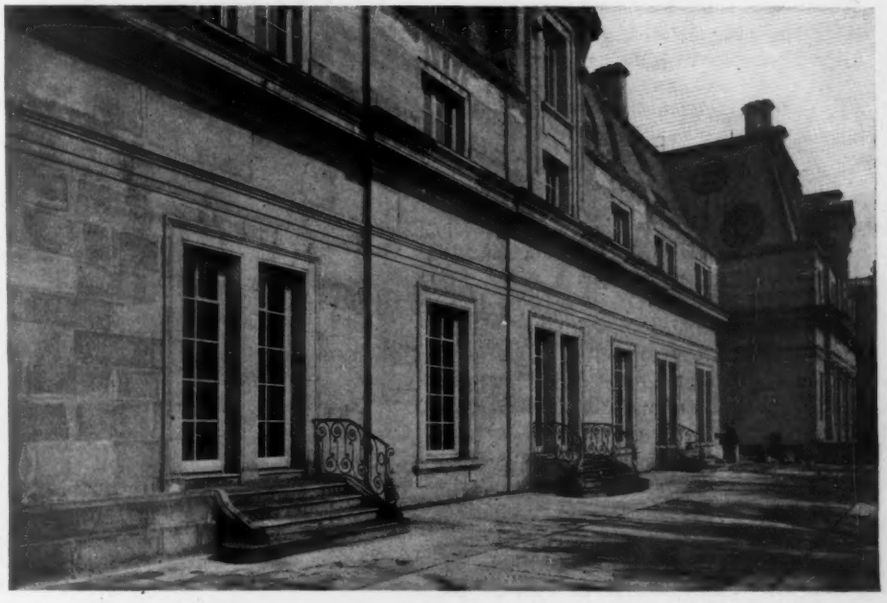
The women's reception room leading into this restaurant is provided with spacious cloak rooms, etc., and guests are thus admitted without any necessity of passing through the main vestibule of the club.

Georgian Style Decorations

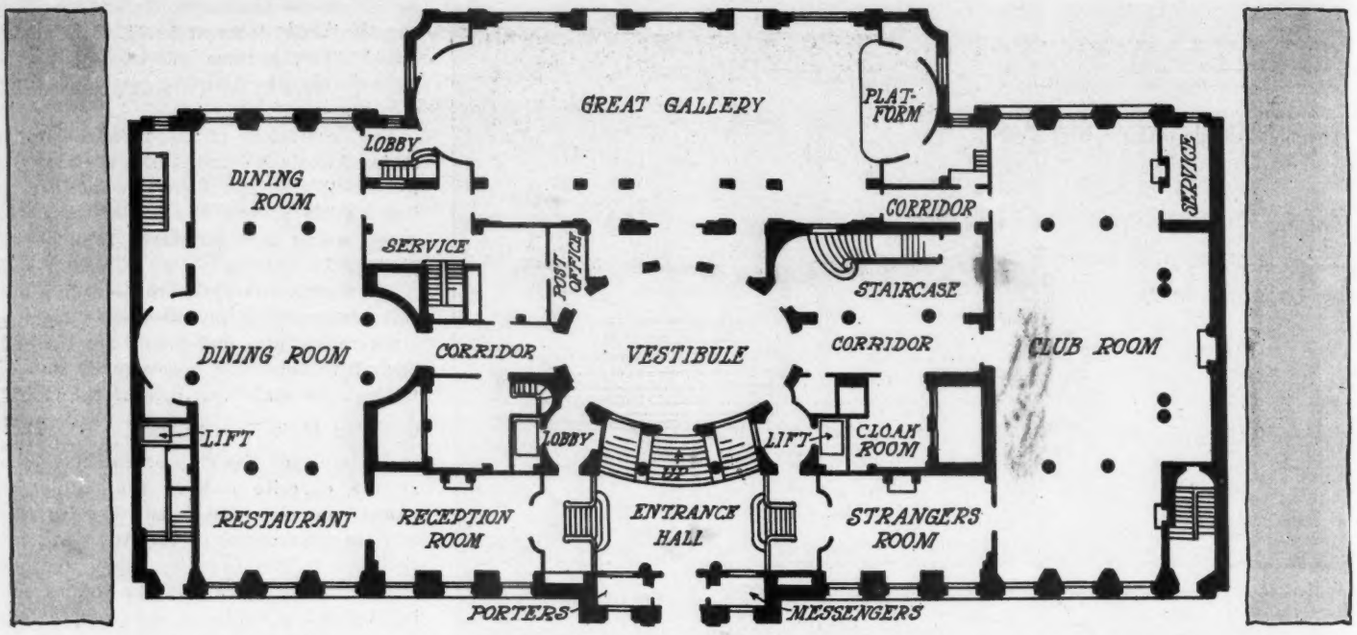
The style of the club or smoking room at the opposite end to the restaurant, namely, the west end, is entirely different, and the decorations of this room are carried out in the Georgian style, and one cannot but be struck by the Adams ceiling, which is a replica of one that previously existed in the building of the old war office. The panels in this room are decorated with pictures by Hoendecoeter and Daniel Marot.

Passing forward from the main entrance a flight of steps leads one to the magnificent two-story elliptical vestibule. This vestibule is without doubt one of the finest conceptions in connection with the new building. The walls are entirely composed of stucco, which gives an effect of highly dressed stone. A gallery runs round the upper portion, from which Roman Doric columns rise supporting the roof, in the center of which is a wrought iron ceiling light.

Proceeding directly from the hall and across the vestibule, one enters probably the finest room of the new house, namely, the great gallery, which is a combination of lounge, concert hall, lecture hall, ball room or theater. This room is carried



EVEN THE REAR OF THE BUILDING IS OF A CHARACTER IN KEEPING WITH THE FRONT OF IT



GROUND FLOOR PLAN OF THE ROYAL AUTOMOBILE CLUB'S NEW HOME, SHOWING THE DETAILS

out in the style of Louis XIV period, and the noticeable feature is the painted canvas ceiling, the work of Boulanger. At one end there is a spacious stage with the requisite dressing rooms, and at the other end a minstrels' gallery. From this room one can proceed to the ground floor terrace, which extends the full length of the building, and from which a very pleasing outlook is obtained over Carlton gardens into St. James' park. The outlook from this terrace is one of extreme beauty.

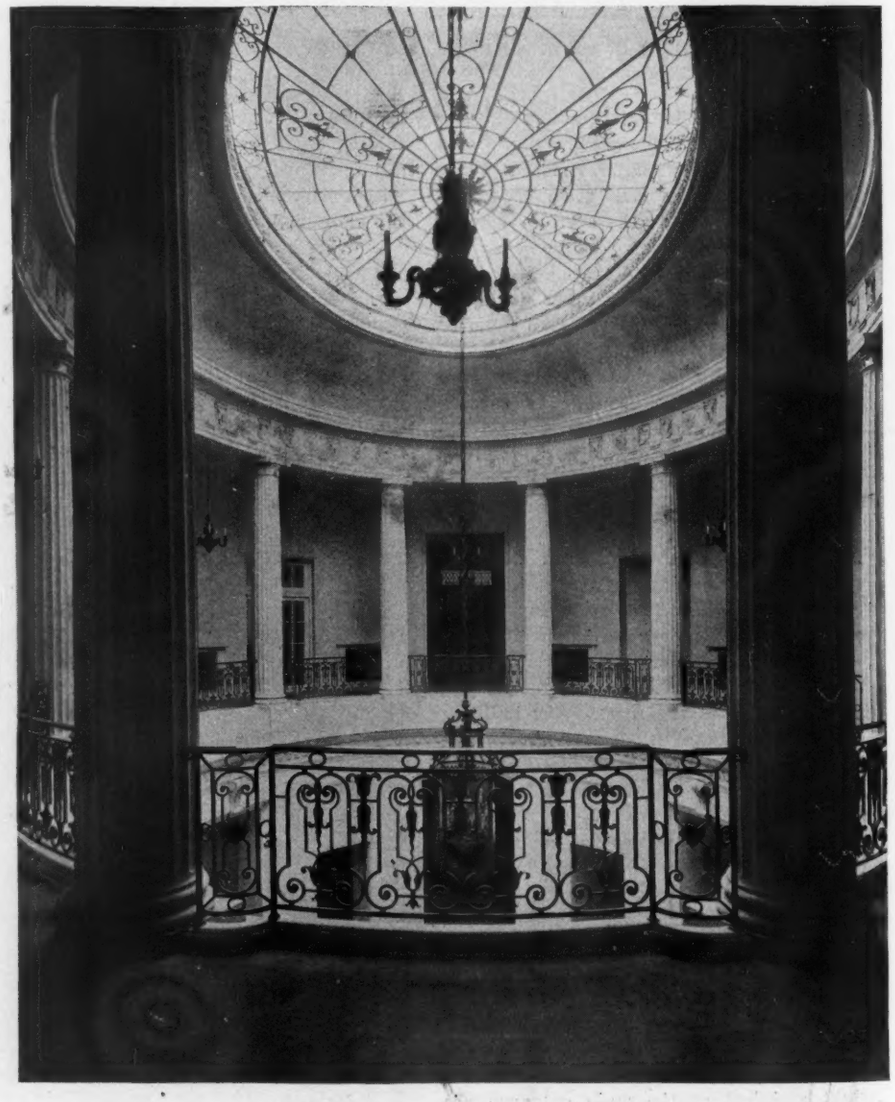
From the central hall access is provided to the restaurant and the club smoking room, very well proportioned corridors running east and west. Arranged round the central hall are convenient cloak rooms, two lifts, postoffice, telephone rooms, etc.

Descending from the entrance hall a two-way staircase is provided to the lower ground floor and basement. At the east side, that is, under the restaurant, the kitchens are located, and at the west side cloak rooms and lavatories.

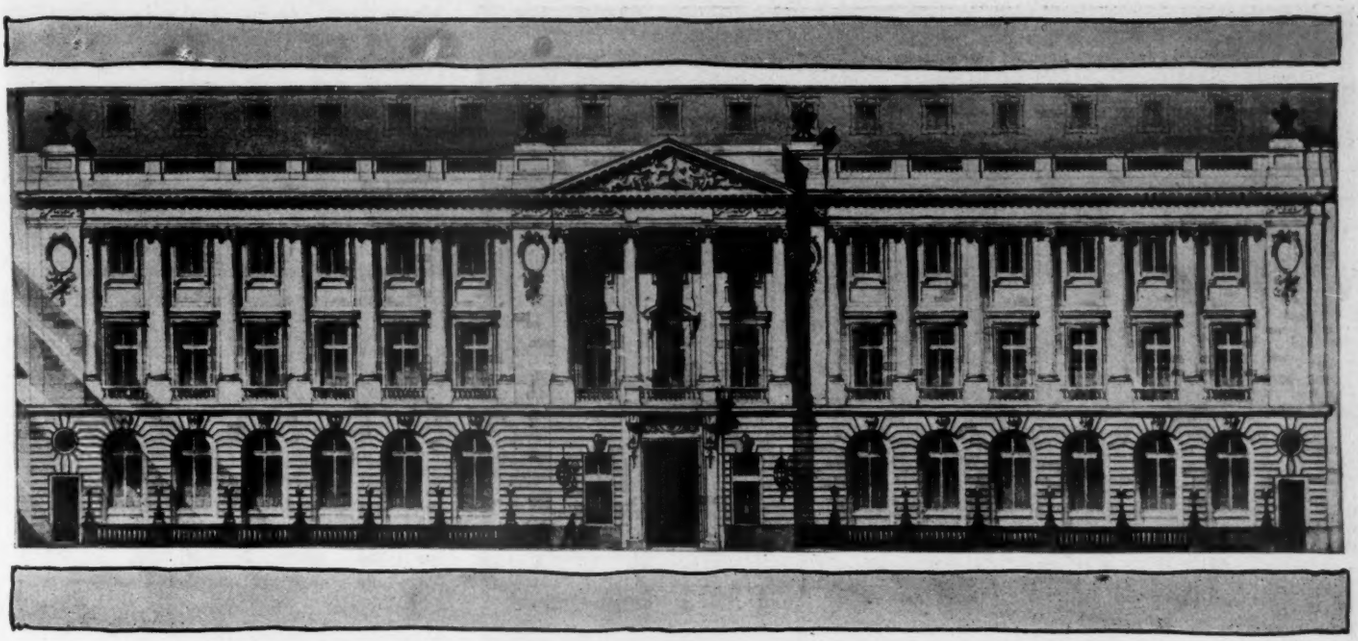
The Pompeiian Baths

Following the staircase one enters the spacious swimming bath, the style of which is Pompeiian. The bath itself is 86 feet long by 30 feet wide, 8 feet deep, and is lined with white Sicilian marble, not only as regards the bath itself, but also the walls and floors. The tank itself is of reinforced concrete with a double asphalt damp-proof course. The water of the bath is circulated by electrically-driven pumps, by means of which it is constantly being changed and purified, an aerator being fixed on the roof of the building for this purpose, and from whence the water is returned to be filtered and heated.

On the same level as the swimming bath one finds the Russian and Turkish baths, which are as complete as such baths can be made, and carried out in a similar luxurious style as the large swimming bath.



LOOKING DOWN INTO THE VESTIBULE, AND SHOWING MAGNIFICENT CANDELABRA AND DECORATIVE SKYLIGHT



FACADE OF THE ROYAL AUTOMOBILE CLUB'S HOME WITH A STREET LENGTH OF 228 FEET

ILLUSTRATION WHICH GIVES A FAINT IDEA OF THE BEAUTIES OF THE GREAT HALL IN NEW BUILDING

Access is obtained to the upper floors from the vestibule by a concealed staircase and lifts.

On the first floor one finds the members' dining room, the same size as the restaurant on the ground floor. The decorations of this room are carried out in the William Chambers style. The other rooms on this floor are the billiard room, the card room, committee room and library.

The Club Offices

The next floor is used chiefly for club offices, such as the touring, technical, legal, engineer's, cashier's and secretary's offices, etc. A few bed-rooms are found on this floor, but the chief feature is a very fine terrace room in the Georgian style which opens out onto a terrace overlooking St. James' park, from whence magnificent views are obtained of Westminster Abbey and the government offices surrounding St. James' park.

The two upper floors are solely given up to members' bed-rooms, whilst a fifth floor at the rear of the building is allocated as servants' quarters, with the exception that a portion is reserved for a photographic studio, printing room, enlarging room and five dark rooms, above which is an observatory. In connection with this studio an expert will be in attendance.

Engineering Features

The weight of the whole building is some 22,000 tons, and of the steel frame 1,600 tons; the amount of cement used is 3,000 tons. The contract for the steel work was let in October, 1909, and completed by April 1, 1910, the floors being finished about 2 weeks later.

It hardly would appear to the casual observer that there are hidden within the walls some 2,000 tons of constructional steel work, and none of the walls is self-supporting. Many of the girders employed

THE TERRACE ROOM, WHICH IS FURNISHED IN STYLE THAT APPEALS TO EASE-LOVING MOTORISTS

weigh from 15 to 24 tons, and are calculated to carry a weight of 350 tons each. The factor of safety allowed for the steel work is 4 to 1.

The foundation work was rendered difficult on account of the great depth required, namely, 37 feet below the street level, the permanent water level being somewhat higher than the lowest portion of the structure; as a matter of fact, the two stories below the ground level are constructed as a water-tight tank.

The Swimming Bath

The swimming bath and the ejector chamber are constructed as tanks immersed in water. An asphalt damp course ¾ inch thick is laid below and around the foundations, and under the 12-inch thick basement concrete floor. In fact, the two stories below the ground floor are constructed as a watertight tank, the surrounding walls being asphalted on the outer side. It was found during construction that the permanent water level was about 32 feet below street level, and that, by pumping, the water could be temporarily lowered to permit the concrete foundations being laid, sumps being constructed in different positions to collect the water. In some cases, piling was resorted to, to prevent the water undermining the adjoining foundations. The excavated ground consisted of gravel and sand, and was partly used for making concrete. It contained a small proportion of clay, but not sufficient to materially reduce the strength of the concrete. Tests were made, and the result indicated that the concrete used was about 5 per cent to 10 per cent weaker than Thames ballast concrete. The mixture consisted of one part of cement, two of sand, and four of gravel, passing a 2-inch mesh. Each tier of columns is, as a rule, supported on isolated foundations placed at different levels to suit drains, ducts, lift pits, bath and surrounding work, the size in all cases being proportionate to the total dead load and part of the live load, a load of 5,000 pounds per square foot being allowed on the ground. The average load on each column was about 300 tons, and the average size of column foundation 11 feet by 11 feet. A ventilation duct 15 feet wide by 5 feet deep runs 200 feet under the basement floor to the filter and up to the fan chamber over the boiler room. Several trenches were also formed for low-level drains.

Lighting and Power

The lighting is arranged on the three-wire direct current system, and there are two separate and independent sets of current available. This supply is installed for 1,000 amperes for lighting, and 1,000 for power, and are connected to separate distribution boards situated in separate chambers enclosed in fireproof walls. Every room has a duplicate installation of lights, so that either supply can be employed. In addition there are two 500 ampere supplies for temporary illumination.

The lights in the staircases and fire escape passages are automatically switched on by the fire alarm connected to a pilot switch. The wire has been arranged for 6,700 points, and about 125 miles of lighting wire and 80 miles of bell wire have been fixed. There are 120 telephone offices with complete telephone exchange within the building.

Ventilation System

Special attention has been given to the ventilating system. The fresh air intake has an opening of 120 square feet and affords a supply of 2,500,000 cubic feet per hour. Two 26-inch double inlet case fans are used to distribute the air, and as it enters it is washed by being passed through a water bath. Before passing into the various ducts the air passes through a set of heating coils, and dried and warmed,

GALLERY IN NEW HOUSE AND ROOM WHICH IS USED FOR COMMITTEE MEETINGS

by which the temperature can be regulated at will.

The kitchens of the club are reported to be the finest and most up-to-date in the world. In connection with this department there are rooms for cutlery, knife-cleaning, silver plate, glass, flowers, china, pastry cook, ices, confectionery, salads, still room, larders, etc., while the chef has an office raised above the kitchen floor so that a complete observation can be taken of all that is taking place.

Windows Are Dust-Proof

All the windows of the kitchen are sealed, and are dust-proof, while the ventilation is provided by a strong purified current of air, and the foul current of air is drawn off above.

In the center of the kitchen are located two flat ranges, each containing four furnaces installed by Cabain of Paris; surrounding these are various cooking apparatus, such as a huge steam jacketed stock pot, five compartment cabinet steamers, vegetable cookers, etc. Motor-driven spits also are installed so that roasting may be done in the old-fashioned manner by the cooks.

With regard to the catering department, it only remains to be said that this is in the charge of Mr. Pruger, the late manager of the Savoy hotel, who has under him American, French, German and other chefs, so that the special dishes of any country can be properly prepared.

There are a large number of other interesting features in connection with this modern palace, and to go thoroughly into every department is quite an interesting day's work.

Air-Compressor Plant

Mention may be made of the interesting air-compressor plant, which has had to be installed in order to force the sewerage from the club into the main sewer; the reason of this is that the depth of the building exceeds that of the London sewers.

Mention also might be made of the three large boilers whereby the building is uniformly heated, and a constant supply of hot water supplied to all the baths and lavatories.

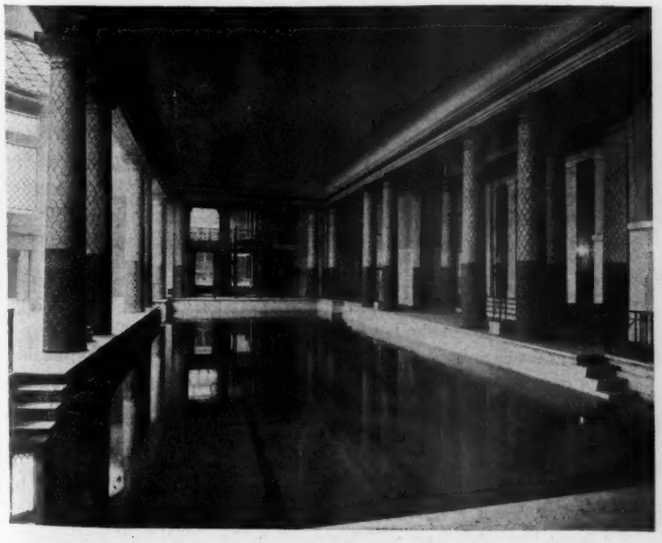
WOMEN'S RECEPTION ROOM, WHICH IS DAINTILY FURNISHED AND WHICH PRESENTS A COSY APPEARANCE

From this brief description it may well be imagined that this new club house is a building of extraordinary interest, and certainly forms now one of the sights of London.

One can also appreciate the renewed energy of this famous club now that it finds itself so comfortably housed. The reputation the R. A. C. enjoys in the way of promoting various events beneficial to the industry has won for it many members who now are prepared to see the club become even more active. The general motoring peace that now prevails in the United Kingdom cannot but help improve the situation and the R. A. C. should be the last word—the court of appeals of motordom.

Of course we Englishmen will not attempt to do anything in the racing line this summer, but there are enough events of other sorts on the schedule to keep the various committees busy.

An American visiting the new home of the Royal Automobile Club cannot help but be astonished at its magnificence and more than one of the Yankees has had to acknowledge that the new building is superior to any motoring edifice in the United States, not even excepting the magnificent structure in New York which is called home by the Automobile Club of America. Here in this country it is somewhat different than in America, where many of the clubs have homes of their own. In England motordom has put all its eggs in the one basket and that is represented by the big mansion on Pall Mall.



VIEW OF THE SWIMMING BATH AND ONE CORNER OF THE KITCHEN

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Children Who Never Grow Up

CHILDREN are the greatest and best imitators in the world; they learn by imitation; they progress by imitation; and until the age of reason arrives depend entirely on imitation for their success in life.

WHAT is true with the people of any race is generally true with the new industries of any race; in the early years imitation is a big factor; a newcomer copies the works of those who were in the industry before him; and not until the industry is a decade or more old does the majority of the concerns devote much time and effort to research work; they are content with imitation.

THIS has been true in the motor car industry; it has been true in nearly every other industry. It is no disgrace to be an imitator; in fact, it is rather an indication of business acumen and sagacity, for wherever unbounded research and individualism are allowed to run rampant in a new industry, the man who is putting up the money invariably loses a great deal. Imitation is correct in the motor car business just as it is with the child; but when the child reaches 10 or 12 years of age he begins to act on his own volition, he begins to realize that he is a force unto himself, he begins to realize that he can do things that others cannot or may not; he has reached the transition line, where imitation takes a secondary position and individuality comes to the front in the battle for business.

THE childhood of the motor industry has almost passed, it has passed several years ago with many of the big concerns; there are many, however, that are still very small children. They are still imitators; some are very poor imitators at that. Six or 7 years ago nearly all concerns in America were imitators; a few years before that all concerns in England and France and many other continental countries were imitators; everybody is an imitator one time or another.

THOSE American concerns that were not imitators when they launched into the motor market, but called themselves Pharisees—not as other makers are—are in nearly every case out of business; and those radicals, if they may be termed such, who wanted to make every part of their car different from all other cars are either out of business or were compelled to enter the imitation stage and learn to walk.

YOU cannot escape being an imitator no more than you can escape being a boy before you grow to be a man; but because you start as an imitator is no reason you must always be one; it would be just as sensible to be a boy and never grow up and broaden out.

THAT is what some car makers are doing today, just being boys, continuing to imitate; they are scarcely able to walk; they cannot read; they are helpless except in copying what they see others do—children who never grow up and who continue to remain children.

BUT there are many men in the industry and the number is increasing every year very rapidly. They have discarded their boyish ideas, they are thinking for themselves as men should, they have dropped the blind imitation age, they can distinguish good from bad, they have reached the age of reason and they are becoming mental giants and able to recognize Opportunity when the two meet.

IN the imitation days of the motor industry it was with many a case of select a suitable foreign motor and build as close a duplicate as possible. There was not any disgrace in that because the Frenchman and the Englishman did the same, both copied from the German. But because they once imitated was no reason that they should always imitate; and thanks to our good American judgment some of our biggest imitators a few years ago are now our biggest originators; in a word, they have graduated from imitation, as a boy from school, and are ready to work for themselves.

THERE are many indications around to show what it means by discarding the imitation age. In the steel industry is this particularly so. Our best car builders are not taking whatever grade of alloy steel the steel maker may have on hand, but they have installed their own metallurgical department and are carrying on innumerable investigations to discover what is best suited for their particular car. What is best for one car may not be best for another in which principles of design vary greatly.

ONE maker stated a year ago that his metallurgical department had analyzed more than 500 different bearing compositions after testing each out in order to discover what bearing metal was best suited to carry the crankshaft in his motor. In addition to examining these many specimens his company had also made up several hundred compositions according to their own formulæ in the quest of finding out what is the best metal.

WHAT one maker has done in the research for a good bearing metal another has done in the development of his motor to get more power. One of the most efficient American motors today was a year or 2 ago an out-and-out copy of a foreign one, and yet this maker, without changing the general design, has by research and experiment been able to get over 15 per cent more power from it than the foreign concern has. This is an excellent example of the boy imitator who has developed into the real man creator.

THE days of foolish imitation are fast passing by. There was a time when an American car maker thought that he must use a certain feature of design simply because the foreign cars used it. If a Frenchman used a water-cooled brake to meet the nearby conditions of the Alps in which the cars were in constant use some blind American imitator thought that he must do likewise. He soon saw the errors of his ways.

ONE of the best indications of the stability of the American car industry is the fact that our own makers are studying faithfully to meet conditions which are local to America. In this respect the foreigner is now the imitator because he has discovered that he too must follow the example of the American builder in designing vehicles that are best suited to the American road conditions.

WHAT will discourage blind imitation as quickly as anything else is the present work that the Society of Automobile Engineers is carrying on. The rapid increase in the membership of this organization will bring hosts of designers into close contact with the latest progress; their eyes will be opened and they will begin acting for themselves. The age of misdirected effort will pass away and America will come to her own, namely, a nation in which individual effort founded on complete investigation will be the leader. Then will America have real men, men who have once been boys but who then will have set aside childish thoughts and childish acts and will think and act as men.

Mulford in Lozier Enters Elgin Races

CHICAGO, April 4—The first entry for the national stock chassis road races at Elgin next August was received today by Chairman Charles E. Gregory of the club's contest committee when the Lozier company nominated Ralph Mulford to defend his title to the Elgin National trophy. The Lozier company asks for No. 3, which number Mulford carried to victory last summer.

Consent of the property owners to use the Kane county circuit for the 1911 national stock chassis road races has been secured and the Elgin Automobile Road Race Association and the Chicago Motor Club have signed the contract that makes them partners in the enterprise the same as last year, so everything looks promising for the renewal of the big event on August 25-26. The contract was signed last Thursday night when the Elginites came to Chicago with all the frontage consents in their pockets. In general the contract between the two organizations is the same as last year except that the Chicago Motor Club agrees to divide the entry fees on all nominations in excess of thirty. Last year the Chicago club took the fees and the Elginites had everything else.

In return the Elginites agree not only to improve the course but to put up a better grand stand. The stand will be higher from the ground so that a better view of the course may be had; it will be set at an angle from the road and there will be a row of boxes at the top from which a view of both legs of the course may be had. The home stretch is to be widened so three cars may run abreast; the bumps taken out between Udina and the tape and the back stretch improved where necessary. There will be 6 days of practice this year instead of 10 and the races will start at 11 instead of 10 o'clock. Practice will be for 2 hours daily between 11 a. m. and 1 p. m., and it is hoped that the state militia encampment will be held at Elgin in August, which would give the road race association 5,000 soldiers for patrol work. In addition efforts are being made to oil the road between the city limits of Chicago and Elgin in order to give spectators traveling to Elgin a country boulevard which will be free from dust.

GLIDDEN TOUR OFFICIALS NAMED

New York, March 31—A meeting of the contest board of the American Automobile Association was held today at which dates were selected for the annual Glidden tour and officials named. It was decided that the 1911 event shall be known as the Glidden reciprocity tour, with the start being made from Washington, D. C., June 19 and the finish at Ottawa, the capital of Canada, on June 26. One day of the tour will be devoted to a hill-climb and the performances of the cars will be factors in determining the final awards. The approximate distance of the tour will be 1,090 miles.

David Beecroft, president of the Chicago Motor Club and a member of the national contest board, was appointed referee of the tour, while F. E. Edwards, also of Chicago and chairman of the A. A. A. technical committee, will serve in the same capacity on the tour. The pathfinding and pilot work will be done by the touring information bureau of the A. A. A., while the business management will be conducted by the contest board. Full details as to the conditions of the tour, along with entry blanks, will be announced next week.

Coming Motor Events

April 4-8—Commercial Car Automobile Dealers' Association show of Pittsburg, Pa.
April 8-9—Twenty-four-hour race, Los Angeles motordrome.
April 15—Motor Truck Club's commercial vehicle parade. New York City.
April 12-15—Show at Sioux Falls, S. D.
April 16-23—Show in Prague, Austria.
April 20-22—Three-day run of Lancaster County Auto Trade Association of Lancaster, Pa.
April 22—Redlands annual hill-climb. Redlands, Cal.
April 23-28—Touring car contests in Modena, Italy.
April 29—Quaker City fourth annual social run, Quaker City Motor Club.
May 5-8—Reliability run from Los Angeles, Cal., to Lakeside Inn and return.
May 7—Targa Florio road race, Italy.
May 14—Cataluna cup road race, Spain.
May 16-19—Four-leaf clover endurance run of Automobile Club of Washington, D. C.
May 21—Hill-climb, Limonest, France.
May 21—Ries hill-climb, Austria.
May 25—Touring car kilometer speed trials, Le Mans, France.
May 25—Fuel economy test, Chicago Motor Club.
May 27-31—Five-day tour to Indianapolis of Chicago Automobile Club.
May 28—Hill-climb, touring cars, Le Mans, France.
May 28—Touring car reliability trials in Germany.
May 29-31—Tour to Indianapolis of Chicago Motor Club.
May 30—Five-hundred-mile international sweepstakes race, Indianapolis motor speedway.
May 25 or 28—Meuse hill-climb, Belgium.
June 1—Speed trials, Bucarest, Roumania.
June 4—Hill-climb, Trieste, Australia.
June 18—Voiturette and light-car road races, France.
June 19-25—Glidden tour from Washington, D. C., to Ottawa, Canada.
June 22—Algonquin hill-climb, Chicago Motor Club.
June 25—Grand prix of Automobile Club of France.
June 25-July 2—Endurance contest, Denmark.
July 4-20—Prince Henry tour.
July 9—Mount Cenis hill-climb, Italy.
July 13-20—Ostend week, Belgium.
July 19-29—Motor truck run, New York to Chicago, Chicago Motor Club.
July 21-24—Meeting at Boulogne-sur-Mer, France.
August 6—Mount Ventoux hill-climb, France.
August 25-26—National stock chassis road races, Chicago Motor Club. Elgin, Ill.
September 2-11—Agricultural motor vehicle show, Roubaix, France.
September 9—Grand prix of Italy, at Boulogne, Italy.
September 10-20—Voiturette and small-car trials in Hungaria.
September 16—Touring car competition, St. Petersburg-Sebastopol, Russia.
September 17—Semmering hill-climb, Austria.
September 17—Start of trials of l'Auto, France.
October 1—Gallion hill-climb, France.
October 9-13—One-thousand-mile reliability run, Chicago Motor Club.

TROUBLE BREWING FOR A. A. A.

Syracuse, N. Y., April 1—There seems a strong probability that the Automobile Club of Syracuse will withdraw from the American Automobile Association and the New York State Automobile Association, and that the Rochester club and other organizations will follow suit. There is a strong feeling among members of both the Syracuse and Rochester clubs favoring this move.

The trouble arises over the Callan law, which has been unpopular with motorists of the Empire State since it went into effect a few months ago. Secretary of State Lazansky is notifying owners who have not yet taken out 1911 licenses that they must get them at once or be arrested. The local headquarters are at the Packard garage, 410 West Onondaga street. Unless car owners get their number plates at once they must send to Albany for them and pay the charges themselves, claim the authorities, although it is claimed the new Callan law provides that license plates shall be delivered to motor car owners at no expense to themselves. This section of the Callan law is causing trouble and lawsuits through the state, and the Syracuse and Rochester clubs claim that the state association should take some hand in it.

A meeting of the state association is called at Albany on Saturday. President Hurlbut W. Smith, of the Syracuse club, who also is the treasurer of the state body, will be there and it is said in Syracuse that the future of the state body hangs in the balance. The alleged indifference by both the larger bodies mentioned to the stand taken by the secretary of state's office has bred deep resentment in Syracuse. Then, too, the Syracuse and Rochester clubs object to the control of the finances of the state body by the A. A. A.

The officers of both clubs declare themstrong enough to continue doing business without the larger organizations.

1—WILCOX, NATIONAL DRIVER, WHO BROKE STOCK CAR MILE; 2 AND 3—BURMAN AND THE BUICK BUG

Despite Rough Beach at Jacksonville

Wilcox in National 40 Breaks Stock Car Mile Record Made By Oldfield in Knox at Daytona—Disbrow in Pope-Hartford Makes New Figures for Long Distances in 300-Mile Even

JACKSONVILLE, FLA., April 1—The Atlantic-Pablo beach has been christened as a speed course and the meeting which finished yesterday has been well received by the local motoring fans. For 4 days the eyes of the country were pointed to the Florida metropolis and while the beach was not in as good condition for fast work as the course at Daytona the racing was of a high class.

Several world's marks fell, of which the record of Howard Wilcox in the National 40 of :40.32 for the stock car mile mark and the 20-mile distance established by Bob Burman in the Buick Bug are the choicest. Wilcox's ride was one of exceptional class and is a tribute to the work of the driver as well as the big blue car itself.

Louis Disbrow smashed several records in his 300-mile victory in his Pope-Hartford, and from the running of his car the races here give a good line on what he will be able to do in the coming Memorial Day classic at the Indianapolis motor speedway. The meet here showed conclusively that a car could go the long distance at a high speed and the chances for an 80-mile average at Indianapolis are looming brighter.

Stock Car Records Claimed

Several stock car records for various classes are claimed, but officials have not had the opportunity to investigate the results. Other than the decision of several stock car championships of which the Warren-Detroit, Mercer and National captured the honors, the meeting did not show anything startling. The racing was interesting, with big fields to start in the events, something very extraordinary for beach racing.

Bob Burman, driver of the Blitzen Benz, will attempt to lower the world's 1-mile mark of :27.33 established by Barney Oldfield last year at Daytona. Burman will make the trials under the management of the Florida East Coast Automobile Association.

Accompanying him will go two National stock cars which will try for marks in their class. Burman's failure to lower the marks at Pablo beach can be attributed to the rough course, and he expects to make the effort of his life on the smooth sands at Ormond-Daytona.

Racing on Thursday

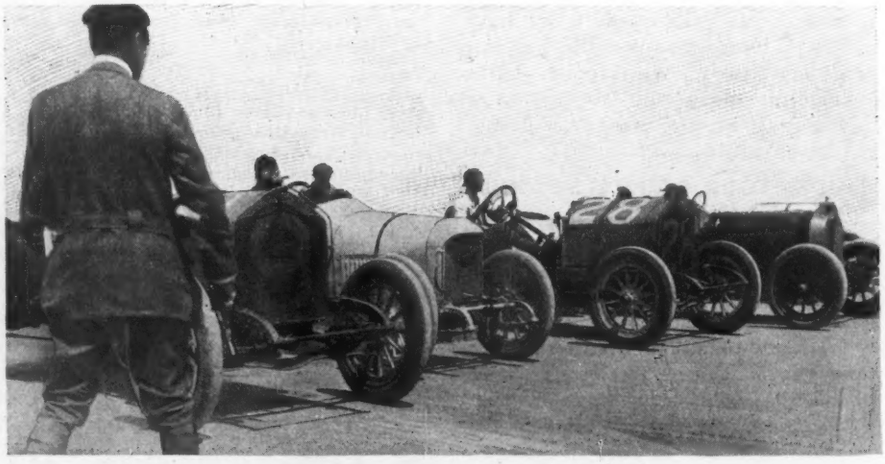
Jacksonville, Fla., March 30—Over the rough course at Pablo this afternoon Howard Wilcox covered a mile with a flying start in :40.32 in a National 40, lowering the world's stock car record of :40.35 established by Barney Oldfield in the Knox at Daytona last year by .03 seconds. This performance was the feature of a big day of racing and the little Indianapolis pilot received the plaudits of the thousands that lined the course.

Driving his Buick Bug in the 20-mile free-for-all, Bob Burman negotiated the distance in 13:11.92, establishing a new record for 20 miles at the rate of 91.06 miles per hour. Burman's course required two bad turns.

A strong west wind made the beach a very poor course for exceptional speeding, the receding tide leaving ridges all along the 10 miles of speedway. This was the handicap that Burman was forced to contend with when he made his trial for the world's record for 1 mile. He finished the distance in :30.27, winning the $1,000 cash prize offered for the fastest mile.

Glory for Howard Wilcox

By capturing the national stock car championship for cars from 301 to 450



LINEUP OF THE CARS IN THE 300-MILE RACE

4—DISBROW IN POPE-HARTFORD; 5—TOWER, WARREN-DETROIT; 6—HUGHES, MERCER DRIVER

Speed Merchants Smash Some Records

Burman Shows Tremendous Pace in Buick Bug in 20-Mile Race—Warren-Detroit and Mercer Shine Among the Small Cars—Racing Men Going to Daytona to Resume Time Battle

cubic inches piston displacement, Wilcox added more glory to his portion and the National heap. His time of 3:56.82 was exceptionally fast and near record time. A 10-mile handicap fell to Rouse in a Lancia, who was the first man to leave the tape. Wilson in the Cole was second and Disbrow in the Pope-Hartford Hummer was third.

A 10-mile race for cars under 600 cubic inches piston displacement kept the spectators on their feet for the last 2 miles of the contest. Disbrow in the Pope-Hartford nosed out Wilcox in the National in the last hundred feet of the race. Seven events were run off today in order to make the 300-mile race tomorrow the only event on the program.

Disbrow wins Long Race

Jacksonville, Fla., March 31—Louis Disbrow of New York, piloting the 50-horse-power Pope-Hartford Hummer, rode to victory in the 300-mile event over the Atlantic-Pablo beach course this afternoon, capturing the $1,000 cash prize and breaking four records. His great drive lowered the 50 and 200-mile marks held by Fletcher and the late Tobin De Hymel, and established new records for the 250 and 300-mile marks. His average for the 3 centuries was 77.08 miles per hour. Charlie Merz, driving a National 40, was second in 4 hours 15.19 seconds.

A high, turbulent tide swept the beach clean of the riffles that were the bane of the record smashers Thursday, and the cars that lined up at the wire promptly at 11 o'clock faced a great course and a great day. The high surf cooled the atmosphere and the crisp winds were a balm to the pilots of the hot, throbbing motors. Bob Burman, who was entered with the Prince Henry Benz and a favorite in the contest, was a few minutes late in arriving at the tape on account of filling oil tanks and was left by Starter Wagner, who refused to hold the contest.

TIMING DEVICE LOCATED IN JUDGES' STAND

SUMMARIES FOR THURSDAY

FIRST RACE, 5 MILES, OPEN, 161-230 CLASS, CLASS C, NON-STOCK

Car	Driver	Time
E-M-F	Witt	4:20.10
Warren-Detroit	Tower	4:25.00
Lancia	Rouse	4:52.30
Cole	Tucker	4:53.00
E-M-F	Cohen	5:03.25
Warren-Detroit	Evans	7:52.00

SECOND RACE, 5-MILE OPEN, 301-450 CLASS, CLASS B, STOCK

Car	Driver	Time
National	Wilcox	3:56.82
Mercer	Hughes	4:18.98

Only two starters

THIRD RACE, 10-MILE OPEN, 161-230 CLASS, CLASS B, STOCK

Car	Driver	Time
Warren-Detroit	Tower	9:10.52
Lancia	Rouse	10:13.14
Cole	Tucker	10:28.74
Warren-Detroit	Evans	11:42.70

FOURTH RACE, 10-MILE OPEN, 600 INCHES AND UNDER, CLASS E, NON-STOCK

Car	Driver	Time
Pope-Hartford	Disbrow	7:42.39
National	Wilcox	7:54.21
National	Merz	8:09.32
Marquette-Buick	Haycroft	8:46.25
Benz	Burman	No finish

FIFTH RACE, 20-MILE OPEN, FREE-FOR-ALL, CLASS D, NON-STOCK

Car	Driver	Time
Buick Bug	Burman	13:11.92
Pope-Hartford	Disbrow	15:24.52
National	Merz	16:14.21
National	Wilcox	No finish

SIXTH RACE, 10-MILE FREE-FOR-ALL HANDICAP, CLASS D, NON-STOCK

Car	Driver	Time
Lancia	Rouse	10:14.79
Cole	Wilson	10:15
Pope-Hartford	Disbrow	10:16.00
National	Merz	10:24.50
Marquette-Buick	Haycroft	10:25.00
National	Wilcox	10:30.82
Cole	Tucker	11:20.83
E-M-F	Witt	11:31.60
Darracq	Burman	No finish

SEVENTH RACE, 1-MILE RECORD TRIALS, FLYING START

Car	Driver	Time
Blitzen Benz	Burman	:30.25
National	Wilcox	:40.32
National	Wilcox	:41.25
Mercer	Hughes	:48.30

That he did not have an easy ride until the race was well under way can be seen by the time of the two leaders up to 100 miles when Wilcox, who was the contender, had trouble with a gasoline line. Wilcox had tacked his blur of blue, a National 40, onto Disbrow's mount and hung there with bulldog tenacity for the first century.

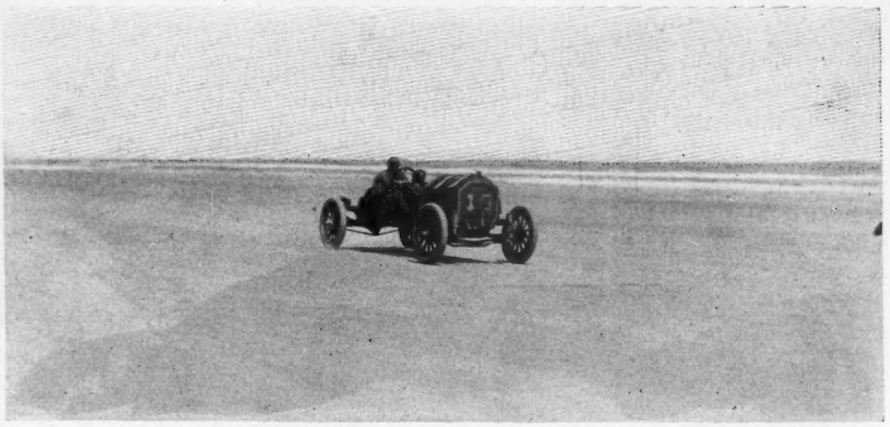
Trouble here practically put the light-haired Indianapolis star out of the running and gave the chase over to his teammate, Charlie Merz, who finished second in the remarkable time of 4 hours 15.19 seconds. From the 50-mile distance it was evident that Disbrow was out to lower the world's records, but the remainder of the pilots stuck to their wheels, hoping that some ill fate would overtake the driver of the red car and enable them to win. But two stops were made in Disbrow's chase, and these were to replenish the fuel supply. It was a great race and racing luck broke with the New Yorker.

Fight Over Third Place

Hughie Hughes, driving the Mercer, was awarded third position, being rated at the time taken at the end of the two hundred and seventieth mile. Lewis Strang, who piloted the Case car steadily through 280 miles of going, protested this decision, as he finished more of the contest than Hughes, who broke down at the two hundred and seventy-fifth mile because of a bad universal joint. Strang was going great at the finish of the event and claims that when the race was stopped he was ahead of the Mercer and should be given third position.

Strang's protest was filed last night and will be presented to the contest board of the American Automobile Association for decision. Wilcox dropped out at the one hundred and eightieth mile, having been out on the course 2 hours 48 minutes. Wilson, driving the Cole, stopped after 70 miles, being out 1 hour 45 minutes. The Marquette-Buick finished but 50 miles of the race, being forced to take to the paddock after 42 minutes 46.97 seconds of going.

In last week's Jacksonville tables the first event Tuesday was a 600-inch and under race and not a 20-mile open. Wilcox drove a National 40 and the average of Merz in a National was 80.14 miles per hour. The 100-mile also was a 600-inch and under race and Wilcox again drove a 40 instead of a six. In the hour race for 301-450 cars, Disbrow covered 81.2 miles and Wilcox in a National 40, 81.3 miles. Event 4 Wednesday was a 231-300 class event, not a 301-450.



WILSON IN A COLE IN ONE OF THE SHORT RACES AT JACKSONVILLE

SUMMARY OF 300-MILE RACE AT JACKSONVILLE, WON BY DISBROW

Car	Driver	50 miles	100 miles	150 miles	200 miles	250 miles	300 miles
Pope-Hartford	Disbrow	37:23.90	1:14:59	1:55:18	2:34:12	3:14:55	3:53:33½
National	Merz	43:24.12	1:24:40	2:07:31	2:48:35	3:33:50	4:15:19
Mercer	Hughes	43:21.13	1:25:40	2:15:51	2:58:33	3:00:00	
Case	Strang	46:00.38	1:30:44	2:17:26	3:05:01	3:00:00	
National	Wilcox	37:49.53	1:24:00	2:02:21			
Cole	Wilson	46:02.90					
Marquette-Buick	Haycraft	42:46.97					

Average miles per hour of winner, 77.08

Other time—Hughes, Mercer, 270 miles, 3:57:51; Strang, Case, 270 miles, 4:10:10; Wilcox, National, 180 miles, 2:48:00; Wilson, Cole, 70 miles, 1:04:45

Good Roads Now Hobby of Arkansas

One Man Stirs Up Farmers and Result Is Attempt Will Be Made To Construct 90 Miles of Highway in 3 Days, as Demonstration of What Can Be Done by Residents' United Efforts

OKLAHOMA City, Ok., April 1—Arkansas, neglected state, the butt of ridicule, has gone good roads mad and is making strides that will put to blush older states that claim to make advancement along all lines of improvement. The enthusiasm that has developed in the northwest part of Arkansas has spread over eastern Oklahoma, and the crusade will be continued indefinitely.

Traveling about night and day spreading the epidemic is W. H. Harvey, author of "Coin's Financial School," but who for the past 10 years has buried himself in the hills of North Arkansas, there to build a summer resort.

This author-road builder conceived the plan of building a good road from Vinita, Okla., to Monte Ne, Ark., Harvey's home, a distance of 90 miles, in 3 days, and so great has been his personal magnetism that the audiences he has addressed over the route have stood up as one man, volunteered to turn out and work the road, and then backed this up with personal checks to pay for the permanent work which must follow, in the way of macadamizing and bridges. Even the smallest of the villages have donated from $500 to $2,000 for the cause, while the cities have gone to $10,000, besides pledging themselves to construct a portion of the bridges.

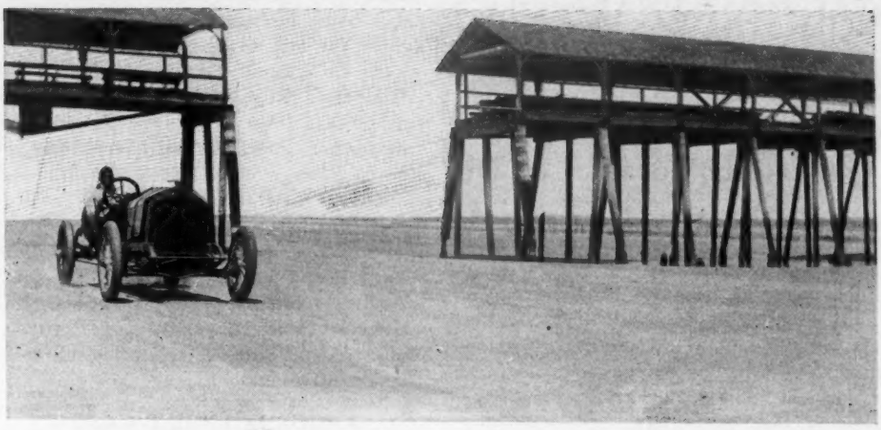
This project is to be known as the Great White Way, for when it is completed the trees, telephone poles and boulders along the route will be painted white, as a guide to the traveler.

Besides the main line of the road to Vinita, Mr. Harvey is talking up enthusiasm in branches which will all lead to Arkansas. One of the branches will lead from Muskogee to Vinita, making a connection there. Another will come to Vinita from Tulsa, while a third will be joined there from Bartlesville. The fourth pike will connect with the trunk line at Grove, coming by way of Joplin from Kansas City.

It is the plan of Mr. Harvey to get everything in readiness and assemble all the road-working machinery belonging to Benton county, Arkansas; McDonald county, Missouri; and Dellaware and Craig counties, Oklahoma; on the stretch of road in Arkansas and grade it thoroughly. The second day the machinery will be carried along to the second division, some of it being sent forward in the night in order to reach the far end, and the third day the same program will be carried out.

Mr. Harvey plans for 3 days in the trunk line grading, because on the first day there will naturally be mistakes, which will be avoided in the days which follow. The plan, too, permits all the road machinery to be used to a greater advantage.

The promoter of this interstate highway has made speeches along the route until he has enthusiasm at a very high pitch. He has farmers residing back 5 miles from the proposed route volunteering the use of their men and teams. The grading foremen on the Kansas City & Memphis railroad, under construction in this county, have expressed a desire to move their whole camp onto the road and work gratis for the 3 days, and the officials of the railroad will permit it.



NARROW PASSAGE FOR CARS UNDER A PIER ON THE JACKSONVILLE COURSE

Baltimore Demands Motor Fire Engines

Chief Horton Recommends Change From Horses and Orders Go Out That No More Equine-Drawn Apparatus Be Purchased In the Future for Municipal Use In Monumental City

BALTIMORE, MD., April 3—All of the fire apparatus in the Baltimore department eventually will be propelled by motor power, if the recommendations of Chief Horton are carried out. He already has sent out the order that no more horse vehicles will be put in service in the local department.

"It is only a matter of a short time," said the chief, "when fire departments all over the country will use nothing but motor power. The day of the fire horse is about over."

The chief made this statement after viewing a successful demonstration of the motor vehicles in New York and after a visit to the various motor centers in various parts of the country. "Scores of fire chiefs from all over the country attended the test and were agreeably surprised by the results," continued the chief. "Motor apparatus, in my opinion, are even more reliable than horses, with far less danger of mishaps. Engines can be driven over wet streets, either block or asphalt pavements, with only slight diminution of speed; then, too, they make excellent time around curves, much faster than the horse-drawn engines. I will not recommend any more horse-drawn equipment. In the near future all the local fire apparatus will be converted so as to be propelled by motor power. It will mean a saving in maintenance and enable the men to reach fires more quickly."

The chief called attention to the fact that the local department is now in the market for a motor supply wagon, a motor vehicle for the superintendent of machinery and a motor hose and engine company, the latter to be established at Forest park, a thriving suburb of the city. Proposals for these have been solicited. The department also has two chiefs' wagons in service, one for Chief Horton and the other for Deputy Chief Emrich. It has also been decided to convert the fire department ambulance so as to operate it by motor power. Bids have just been advertised for making this change.

JOKER FOOLS MOTORISTS

Philadelphia, Pa., April 1—Nearly 100 mystified and irate motorists crowded the central police court this morning, giving vent to all sorts of maledictions and threats against everybody in general and the person or persons responsible for their enforced appearance there in particular. It appears that each held a summons to answer in court to the charge of fracturing the laws regulating speed. Many and diversified were the reasons assigned by the dumfounded owners to each other in denial of exceeding the speed limit or even approaching it. Matters were beginning to assume serious proportions when the discovery was made that the summonses were the prank of a practical joker, and that a fake seal of the city thereon with the inscription "April fool" instead of the date had escaped the notice of the unwary and had been responsible for their temporary loss of temper.

A. L. A. M. SITUATION

New York, April 5—Special telegram—Sixty of the leading members of the motor car manufacturing industry will gather Thursday at the headquarters of A. L. A. M. to consider ways and means of reorganization of that body. Last month it was announced that this would be done at the April meeting and the impression was given that the organization would be crystallized. Since that time, however, the statement has been made, coming from apparently authoritative sources, that the April meeting will not complete the work on hand, and that it will require at least one more general meeting and perhaps two executive committee sessions to place the new concern in working order.

The executive committee convened today and according to report considered only a series of routine matters. It is understood that several of the subcommittees named in March are not ready to report. These are said to include the subcommittee that is taking up the various patents that are proposed to be made the substance and foundation of the new organization. The name of the new body has not been selected and there are several of the manufacturers who seem to think that no change in name will be necessary because if the basis of the organization is a series of patents the members will be licensees and the association might with appropriateness be termed the Association of Licensed Automobile Manufacturers.

According to the best available information, the meeting Thursday will approve of the routine matters taken up by the executive committee and will hear reports of progress from the subcommittees. In May it is believed the final stage of the reorganization will be reached.

IN DAYTONA AFTER RECORDS

Daytona, Fla., April 5—Special telegram—Among the arrivals at the Clarendon hotel today was Bob Burman, who came to the beach course intent on smashing the world's record for 1 mile made by Barney Oldfield on this beach last year. The Blitzen Benz that was used by Oldfield will be the same car that Burman will pilot when he goes after the record. Practically all of the A. A. A. officials that served at the recent Pablo meet will arrive from New York tomorrow.

A. A. A. REVIEW BOARD

New York, April 5—Special telegram—It is reported here that the board of review suggested by the Manufacturers' Contest Association to the A. A. A. will consist of Judge Alton B. Parker, of New York, former democratic candidate for president; Judge George T. Tann, of Savannah, Ga.; Bartow S. Weeks, of New York, and Everett C. Brown, of Chicago, president of the Amateur Athletic Union.

MORE SPEEDWAY ENTRIES

Indianapolis, Ind., April 3—Seven additional entries have been received for the 500-mile race on Memorial day, bringing the total up to thirty-six. The latest in include Ralph de Palma in a Simplex, J. F. Gelnaw and W. H. Pearce in Falcars, Herbert Lytle in an Apperson, and Ralph Mulford, Teddy Tetzlaff and Harold Van Gorder in Loziers.

An addition to the prize list is made by the Findeisen & Kropf Mfg. Co. of Chicago, which hangs up $2,000 in cash to be split among the first four to finish—$1,000 to first, $500 to second, $300 to third and $200 to fourth, the provisions being that Rayfield carbureters are used. This brings the total of side purses up to $6,500.

Windshield Patent Fight Now Waging

Troy Carriage Sunshade Co., of Troy, Ohio, Files Suit Against Polson Mfg. Co., and Sprague Umbrella Co., for Alleged Infringement of Double-Hinged Joint Action Idea for Shield

TROY, O., April 3—It was learned here today that the Troy Carriage Sun Shade Co. of this city, manufacturer of windshields, has already filed suit against the Polson Mfg. Co., Buffalo, N. Y., and Sprague Umbrella Co., Norwalk, O., for alleged infringements of patent No. 890,-667, issued June 16, 1908, to Joseph Lingley of Peckham, Eng., which patent is now owned by the Troy company.

The patent in question is what might be called the double-hinged joint action for the upper half of a glass windshield. By means of this double action the upper half of the windshield can be inclined forward like an awning in front of a store so as to leave a clear open space between the upper and lower glasses of the shield, which is desirable on a rainy day. The upper half of the shield can be put in any desired position. This patent, however, provides for a rigid vertical lower half of the shield, whereas with the majority of the windshields made today the tilting upper half has also provisions for tilting the lower half. The two claims in the Lingley patent are:

1—In a wind screen for vehicles, a fixed lower part carried by standards and an upper movable part centrally mounted upon centers, permanently fixed at the upper ends of solid arms, the lower ends of which are mounted upon centers permanently fixed upon the lower fixed part and means for fixing the arms at any desired angle with the lower fixed part and means for fixing the upper movable part at any desired angle with the arms substantially, as herein shown and described and for the purpose stated.

2—In a wind screen for vehicles a fixed lower part carried by standards and an upper movable part overlapping the lower part and pivotally mounted at the upper ends of arms, the lower ends of which are eccentrically and pivotally mounted upon forwardly projecting offsets, from the lower fixed part, rearwardly projecting slotted offsets at the upper ends of the arms, set screws connected with the upper part of the screen and traversed by slots, and adapted to fix said upper part with bars, disks formed on the lower parts of the arms concentric with the eccentric rivets and provided with concentric slots, set screws connected with the lower part of the screen, and traversed by the concentric slots and adapted to fix arms at any desired angle with relation to the lower part of the screen substantially as herein shown and described.

It will be noted in these claims that one of the leading features is the fixed lower portion with a tilting hinge rod, which extends vertically from the top of the lower shield to the middle of the upper shield. This tilting hinge rod is anchored by set screws to this lower end in any position, the same as the upper half of the shield is in turn anchored by set screws to the upper end of this tilting hinge rod of the shield.

The Sprague Umbrella Co., which has been made a defendant in the case, has issued the following statement: "This patent is restricted very closely to certain propositions that no one at the present state of the windshield art would care to imitate. We do not now and never have made anything that is like or similar to this patent. Our shield has the swinging upper sash the same as a number of other shield manufacturers are making them.

"We will give a charitable institution $100 if any reputable lawyer, after examining the Lingley patent and also our windshield, will make affidavit that he believes that our shield, made to swing from arms above the upper sash, is an infringement of this patent. The Lingley patent claims 'a shield including a fixed lower part carried by standards, and a movable upper part centrally mounted upon centers permanently fixed at the upper ends of solid arms, the lower ends of which are mounted upon centers to permanently fix upon the lower fixed part.' In our shield, while we have a movable upper part, we also have a movable lower part, which is hinged so as to swing downwardly over the hood. Our shield is not carried by standards. We employ a solid upper part which is connected to the upper part by a casting containing a coil steel expansion spring, which is distinctly different from the claims of the patent. The omission of one single element is sufficient to evade infringing a patent and we have not one single element in our shield that is covered in this patent."

NEW BATTERY TRIED OUT

Philadelphia, Pa., March 30—With prominent city and street railway officials abroad, the new Edison-Beach storage battery car was given a thorough and successful tryout on Tuesday morning and yesterday was installed as part of the Philadelphia Rapid Transit Co.'s equipment, making regular runs on the York and Dauphin streets line, attracting a great deal of attention en route. The demonstrating car, with the inspection party aboard, left Broad and Filbert streets at about 10:30 o'clock and proceeded west on Filbert street to Sixteenth street, north on Sixteenth street to Norris street, where a hitch in the originally planned route occurred. The task of taking a short curve here proved unsuccessful and the car jumped the track. Paradoxical as it may appear, this mishap only served to accentuate the good qualities of the trolleyless car, for it regained the tracks by its own power, a condition impossible of performance by the regulation trolley car, the wheels of which must touch the track before a circuit is completed. Finding it futile to take such a sharp turn, the car proceeded up Sixteenth street to Huntingdon street, east in Huntingdon to Fifteenth and south on Fifteenth to Dauphin street, where the car again jumped the track, with the same result as before, the delay being inconsequential. The remainder of the trip to the center of the city was made without further incident.

The storage battery car is somewhat smaller than the average type now in general use here and its power is contained in storage battery cells placed beneath the seats. The new car will do much toward the elimination of poles and wires, in addition to being more economical, easier of operation and less noisy, and if the projected new line is opened in the northwestern section of the city Mayor Reyburn probably will urge the adoption of this type exclusively.

ARGUE IN ENGINE CASE

Buffalo, N. Y., April 4—Final arguments in the patent case of the Carlson Motor and Truck Co. against the Maxwell-Briscoe Motor Co. were submitted today to Judge Hazel in the equity term of the United States circuit court. The Carlson company is asking for an injunction prohibiting the Maxwell-Briscoe company from making a certain motor claimed to be the invention of Carlson. The attorneys for the defendant concern maintain that the motor used by the Maxwell-Briscoe company was built long before Carlson applied for a patent for his engine.

DETROIT TRADE GOSSIP

Detroit, Mich., April 3—The Warren Motor Co. has moved into the large addition to its plant that has been under way for some months. The new building doubles the company's original capacity and the increased facilities are greatly needed at this time. Fred C. Thatcher has succeeded John H. Thompson as manager of the Detroit sales branch of the Warren company. He has been identified with the Detroit Motor Co. for the past 6 months.

Work on the United Motors building at Woodward avenue and Charlotte avenue is finally completed and the United Motor Detroit Co., which handles the Maxwell, Columbia and Sampson cars in Detroit, is now moving into its new sales rooms. The local administrative offices of the United States Motor Co. also will be located here. The rear portion of the building is given over to one of the finest garages in the city. The structure is probably the most ornamental of its kind in Detroit, the exterior being of white enameled tile.

The Cadillac Motor Co. has been breaking former sales records. It shipped last month 1,291 cars, Sales Manager Benson states. This is 200 in excess of any previous month in the history of the company. On the strength of this record 250 department heads of the Cadillac works held a banquet in the Hotel Tuller Saturday evening.

Sales Manager E. C. Morse, of the Hudson Motor Car Co., has gone to Europe for the purpose of establishing a number of new agencies and visit the dealers now handling the Hudson cars on the other side.

C. B. Fear, local agent for the Paterson car, has added the Whiting to his line. He

will have the exclusive agency for Detroit and southern Michigan.

C. J. Hupp, father of R. C. Hupp, general manager of the Hupp Motor Car Co., died last week after a long illness and was buried Friday from his son's residence. Mr. Hupp was a well-known railroad man.

MONTREAL SHOW GOOD ONE

Montreal, March 30—The most successful motor show ever held in Montreal closed on Saturday night with one of the biggest crowds of the week in attendance. It ranks as one of the best ever held in Canada, and the volume of business done has surpassed former years as regards previous shows held here. A surprising feature was the excellent showing which Canadian manufactured cars made. Some of the dealers are of the opinion that the show was held too early in the year, as the unsettled weather had prevented road demonstrations, which naturally lead to the purchasing of a car quicker than a week's talk inside a show. The first week of April is looked upon as a good time, as by that date the roads generally are free from snow and ice and fairly free from dust.

It is estimated that between 25,000 and 30,000 persons visited the show, and therefore it is safe to predict a banner year of car business in Canada.

A remarkable feature of the sales was the interest taken in the commercial trucks. One dealer said that he had placed a truck in his exhibit more as an experiment than with any hope of securing immediate sales, but that he was agreeably surprised by several demands for these vehicles.

GLIDDEN CASE IN COURT

New York, April 5—Special telegram—The settlement of the 1910 Glidden tour trophy award came up today in the supreme court in Brooklyn before Judge Joseph T. Marian. The present hearing is to determine if the final award of the trophy to the Chalmers Motor Co. shall stand, this company having been awarded the trophy on July 21, 1910, by the contest board of the American Automobile Association. The case was called this morning and after an all day argument an adjournment was made at 4 o'clock until 10 tomorrow morning.

Justice Marian today ruled that as the technical committee accepted the Premier car at Cincinnati before the start of the tour and the referee allowed the car to start, then it had a legitimate right to compete so that the evidence tomorrow will be on the stock status, the justice ruling that it is imperative on the part of the contest board to advance proof that the Premier was not stock according to the definition of a stock car as defined in the 1910 rules. It will be remembered that the question in dispute was an auxiliary oil tank and pump carried apart from the motor on the Premier six.

Lozier Moves Into Detroit Plant

Affair Made Formal by Raising an American Flag—New Factory Located on a Site 65 Acres in Extent and Has a Frontage of 800 Feet—Force of 450 Men Is Employed

DETROIT, MICH., April 3—The raising of the American flag on the administration building of the new plant of the Lozier Motor Co., on Mack avenue, this morning marked the completion and formal opening of the newest of Detroit's already large number of motor car enterprises. This factory, which has been under construction since last May, commenced operations today with a force of 450 men, which will be increased as rapidly as possible until all departments are in full operation.

This new plant is located on the Detroit Terminal Co. railroad, on a site comprising 65 acres, with a frontage of 800 feet on Mack avenue. It was built to enlarge the manufacturing facilities of the Lozier company, its cars having heretofore all been built in the plant at Plattsburgh, N. Y. This factory will continue to operate as heretofore, but will build only complete units for use in the Detroit works, the latter plant being the only one in which the completed cars will be turned out. The two factories at Detroit and Plattsburgh will have a combined output of 1,000 cars for the coming season, all parts of which will be made in these factories from raw materials.

The main building, two stories in height, covers the entire frontage of 800 feet on Mack avenue, with side wings extending back approximately 200 feet. In this building are located the factory offices, restaurant, final assembling, physical and chemical laboratories, and experimental departments, together with the body construction and finishing department. Building No. 2 is of one-story, saw-tooth construction, covering 68,000 square feet, and contains the machine shop, chassis assembling, finished stock, and chassis testing departments. Other buildings are devoted to heat-treating, rough stock, garage, and other purposes of this nature, and all of reinforced steel and concrete construction.

One of the notable features of the new Lozier plant is the power building containing 14,000 square feet of floor space, divided into two sections, one for boilers and the other for engines, air compressors and dynamos. This department is equipped with two 350-horsepower water tube boilers and Detroit stokers; one Hamilton-Corliss engine, direct-connected to 625 K. V. A. Allis-Chalmers generator and Laidlaw-Dunn-Gordon air compressor. All departments of the factory are operated by electric power generated from this building. Ninety per cent of the machinery throughout this plant is entirely new and of the latest modern type, installed entirely with the view to producing high-class motor cars. The grounds are enclosed by a concrete fence, capped with ornamental iron grating and entered through steel gateways.

POWER WAGONS HAVE THE CALL

Pittsburg, Pa., April 3—Pittsburg's pleasure car show season, lasting 2 weeks and including the big Exposition show at the Point and the show put on by the Automobile Dealers' Association of Pennsylvania at Duquesne garden last week, wound up Saturday night with a record-breaking crowd.

Hardly had the doors been closed when a big force of men set out to clear the garden of the pleasure vehicles and make it ready for Pittsburg's first commercial vehicle show which opened tonight. In the degree of interest manifested by business men throughout tri-state territory this latter show promises to be quite as much of a success as the preceding two exhibits. The decorations and mural paintings with all the electric displays were left in the garden and hundreds of business men visited the show the opening night.

Not only merchants and manufacturers are being attracted to the show but borough and town officials for a distance of 100 miles from Pittsburg have arranged to meet sales representatives here and decide on the purchase of fire department wagons or police patrols for their respective towns.

All reports received from dealers indicate that every previous sales record made in the way of pleasure vehicles was broken by the total of cars sold during the past 2 weeks. The attendance at the Duquesne garden show was 26,852 people.

It is expected that the sales of commercial vehicles, which have already far eclipsed last year's totals, will be larger this week than during the entire period since January 1. The makes of motor trucks shown are as follows: Buick, Garford, Mack, Packard, Pierce-Arrow, Sampson, Stoddard-Dayton, Peerless, White, Franklin, Lyons and Rapid.

KALAMAZOO BILLS A SHOW

Kalamazoo, Mich., April 1—With the opening of the motor season at hand and popular interest in motor vehicles more widespread than ever, the announcement of the Kalamazoo dealers of a show for April 6-7-8 has attracted a great amount of interest. The exhibit will be held in Reid's garage on West Main street. Much encouragement has been given the promoters in the way of entries.

Car Brake Efficiency and Its Factors

Small Cars Better Braked Than Larger Ones—Brakes Should Not Lock Wheels as Locked Wheels Cause Skidding and Car Does Not Stop so Quickly—Larger Drums Coming Into Use—Various Friction Materials Discussed and Advantages of Each Given

M. R. West
Part I

TO the average person who has never given serious thought to the matter of brake design, it would perhaps seem one of the easy problems for a beginner. Quite the contrary is the case, as experience has shown that on a large per cent of the cars bearing in general a good reputation, the brakes have not given entire satisfaction. To substantiate this claim, attention is called to the following extracts from Motor Age: May 19, 1910, page 8, referring to the Harrisburg reliability tour, "It was a brake test at the end of the run which counted most against many of the cars, thirteen out of nineteen which took the test suffering penalties," etc.

More Brake Penalties

"With the rear axle of each car jacked up, it was discovered in certain cases that the brakes were not rigid enough to prevent turning the wheel by hand. In other cases, brakes in which equalizers were used were discovered to apply on one side only, the equalizer being inoperative for one reason or another."

May 26, 1910, page 3, referring to the Norristown reliability run, Motor Age said: "An examination of the penalty table, shows that fully 50 per cent of the total demerits was imposed during the brake and clutch test."

Same issue, page 5, referring to the Hartford run: "The clutch and brake tests broke several perfect scores."

July 7, 1910, referring to the results of the final examination following the end of the last Glidden tour, the statement is made that "only three of the eleven cars made perfect brake performances, that is, stopped the cars under 50 feet with each set of brakes," etc. Incidentally it might be mentioned that of the six cars which finished in the Glidden event, none stopped from a speed of 20 miles per hour under a distance of 83 feet, and one took 192 feet. It should also be noted that of the five cars finishing in the roadster type or Chicago trophy event, only two received penalties during the brake test. One of these stopped 1 foot over the limit and the other went 133 feet over the limit; it was apparently not due directly to the brakes."

September 1, 1910, the table on pages 20 and 21 showing the penalizations during the Munsey tour, indicates an average of almost 15 points given to each car on account of faulty brakes. It is interesting to note the distribution of brake penalties among the various classes of cars as follows:

	Average brake penalty
Class 1A, under $800	0
Class 2A, $ 801 to $1,200	3
Class 3A, 1,201 to 1,600	12
Class 4A, 1,601 to 2,000	11
Class 5A, 2,001 to 3,000	17
Class 6A, 3,001 and upward	102

The contestants for the Omaha World-Herald trophy received penalties as follows:

	Av. Brake penalty
Division 1, $800 and under	22
Division 2, $801 to $1,600	14
Division 3, $1,601 and upward	51

Note that in both runs, the highest-priced cars suffered most, as will be referred to later. Though many more cases could be cited, those given serve to show that the problem of brake design is not such a simple matter after all.

Defines Good Brakes

Naturally the first thing for the designer to consider, is what constitutes the qualifications of good brakes. The statement has been made that the brakes necessary or desirable on any car need be only powerful enough to absorb work as fast as the engine or clutch is able to deliver it. This is almost as logical as saying that a man should eat no more at one meal than he did at the one just preceding it. In other words, both of the above start their calculations upon facts which are not basic or fundamental. Because the clutch, or previous meal, happens to be inadequate is no sign that the brakes or following meals should also be made smaller than needed.

A little thought will show that, given two cars of equal weight, one may have a low-powered engine and clutch, whereas the same members of the other car may be ten times as powerful. Both may be examples of good design, in one case the car being intended for an owner who is not satisfied unless he can gain a speed of 20 miles per hour within perhaps 200 feet from a standing start, whereas the other is intended for the one who is content with attaining that same speed, after having gone five times as far. When both cars have reached the same speed and the drivers are suddenly confronted with danger very close at hand, it is obvious that the driver of the low-powered car would not be satisfied with stopping in five times the distance which the other could negotiate. Both would desire and should be able to stop in the shortest possible distance, and this should be approximately the same for both.

Probably the most desirable qualification may therefore be considered as the ability to stop the car in the shortest possible distance.

Length of Stops

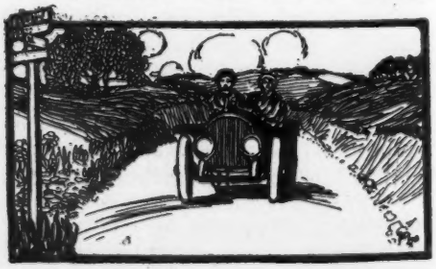
In the second half of this article, when taking up in detail the factors that determine the distance required for stopping a car under various conditions, it will be shown that the distance required does not depend upon the weight of a car, although it does make a difference what per cent of the total weight is on the braking wheels. The greater this per cent, the shorter may be the stop. Recent shows indicate that a number of the European manufacturers are taking advantage of brakes on all four wheels since it is evident that only in this way can all the weight be on the braking wheels.

For greatest efficiency, the brakes should be able to instantly stop the rotation of the wheels and as long as they are able to do that, nothing more can be gained in the way of shorter stops by stronger ones. Care is taken to specify that the brakes should be able to stop rotation since that means more than to prevent rotation after the wheels have once stopped. So long as there is no sliding or slipping of the tires, they can grip harder and retain their hold on the road, hence offer a greater retarding force than they can after slipping has once started.

Smooth and Gradual Engagement

Although the brakes should be able to set or stop rotation of the wheels, they should seldom be called upon to exert this power. Setting the wheels and sliding the tires cause not only excessive wear, but greatly increase the distance within which it is possible to stop. Under certain conditions, it is also liable to cause skidding of a nature that takes away from the driver control of not only the speed but also the steering of the car.

It is therefore evident that for highest



efficiency, the brakes should be capable of being smoothly and gradually applied and at all times under the control of the driver. With the aid of his judgment and experience, he may then be able to apply the brakes to such an extent as will almost but not quite cause the tires to slip and lose their hold on the road surface.

If the friction between the tires and the road were always the same, it would perhaps be possible to automatically limit the resisting torque of the brakes and thus make it a simple matter to stop a car in the shortest possible time or distance, and this without any danger of slipping the tires. But the road surfaces are by no means of the same nature and the friction between the tires and the roads varies between such extreme limits that the above suggestion is defeated.

Another idea that has been advanced for accomplishing the same thing is to arrange the brakes so that their application is brought about by the rotation of the braking wheels, hence as the wheels slow up the brakes begin to release. A little thought will make it clear that although such an arrangement may prevent the wheels from being actually locked, it will not accomplish its purpose since the wheels must actually slip and begin to slow down before the releasing action will begin. It would be a case of locking the barn doors after the horse is stolen, since it is the starting to slip which is the point of vital importance.

We have thus named the essential qualities for making a short stop such as would be desired in an emergency. Perhaps you will say, "If the brakes will stop the car in the shortest possible distance, they surely must be all right." In answer, it may be said that probably comparatively few cars ever leave their factories without the qualifications mentioned. But many have failed and the main qualification lacking has been the inability to maintain their original efficiency.

Heat Radiation Important

One of the principal causes for this is lack of sufficient ability to radiate heat fast enough. It must be remembered that when the brakes retard the motion of a car they are absorbing energy and transforming it into heat which raises the temperature of the brake parts. This fact becomes most apparent when descending long grades. If friction be disregarded, the brakes absorb as much work in maintaining a constant speed of the car while descending a hill as must be developed in the engine in order to maintain that same particular speed while ascending the same hill. The heating effect is present when braking on the level ground, but owing to the short time the brakes are then in action, the temperature does not generally rise so high. If anyone requires further proof of the extent to which brakes may heat, let him note the brake shoes of a locomotive after it has just brought a heavy train to a stop and he will find it

by no means rare to see them red hot. A good demonstration occurred during one of the recent motor car races where a dragging brake so heated and burned the wheel spokes that the wheel collapsed.

Perhaps no one event has called attention to the lack of proper heat-radiating facilities more than the Glidden tour of 1907, which led over the mountains of Pennsylvania. Brake penalties were very severe and many accidents were narrowly averted. The writer has in mind one particular car that had made an excellent showing during the most of the tour and had ascended the steepest mountain grades without difficulty, yet while descending it was put entirely out of commission because the heat developed by the braking action was dissipated so slowly that the temperature rose to a point where certain vital parts of the transmission actually pulled apart because the metal was beginning to melt. To be sure, this was perhaps an extreme case.

Usually the first result of too high a temperature of the brake parts is that the brake liner, if such is used, is burned. This will be dealt with later when discussing various liners and their characteristics. If instead of using one of the more familiar linings, the friction surfaces are metal-to-metal, the brakes will perhaps be able to withstand more abuse than lined brakes, but they, too, suffer from excessive temperatures, cutting badly and in extreme cases the parts actually freezing together and locking the wheels. In any case excessive heat means rapid wear with consequent need for more frequent adjustment.

Larger Drums Needed

The principal means adapted by perhaps most of the present-day designers in attempting to care for the heat-radiating problem is to use larger brake drums. Several years ago it was not uncommon to see brakes having drums perhaps only 7 or 8 inches in diameter and with bands not over 1 inch in width, but today one may see drums having a diameter close to 18 inches and brake bands 2½ or more inches in width. Aside from other important advantages, it will be seen that this increase in size offers more surface from which the heat may radiate. As a rule the lighter cars, which include most of the cheaper cars, are provided with brakes larger in proportion to their weight than are the heavier and more expensive cars. This probably accounts for the fact already mentioned, that in certain brake tests, the cars of the cheaper class all went through without penalties.

Another method is to design the brake drums so that the brake bands or shoes will contract with only the inside surface of the metal drum, thus leaving the other side freely exposed to the cooling action of the air instead of being partially covered by an outer or contracting band.

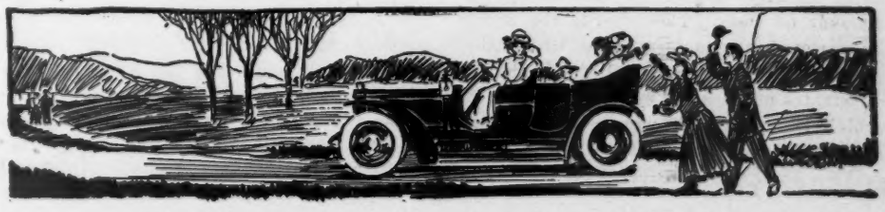
A third method consists in using what amounts to two drums of different diameters on the same wheel, one for the service brake and the other for the emergency. Some even arrange fan blades as spokes between the two drums, thus increasing the amount of cooling surface as well as cooling air. Few have gone to the extent of water-cooling the brakes, although there have been some isolated cases.

At the same time that larger diameter drums help to radiate the heat, it should not be forgotten that the increased friction surface also decreases the unit pressure between the surfaces and hence the resulting wear. These two points are of importance on any brakes, regardless of other features of design, since it is evident that wear is the principal thing which necessitates readjustment at frequent intervals.

Grease Reduces Efficiency

There are other causes besides heat and wear, however, that at times either reduce the efficiency of brakes or make them entirely useless. Among these causes may be mentioned the following, oil or grease on the friction surfaces, gradual changes in the nature of the brake lining due perhaps to heat, oil, water, grit or to the particular brand of liner. The usual result from any of the above is, that after a time, the coefficient of friction between the rubbing surfaces is reduced to such an extent that it requires more strength than the ordinary driver possesses to apply the brakes to any useful degree.

Later on in this article will be found a brief discussion of the principles generally used in the design of brakes, and it is hoped that this will give to the reader a better understanding of the degree to which the different factors effect the effi-



ciency of the brakes that are used. With any form of brake, it is apparent to all that friction causes wear, and hence the parts which wear the most should be of such form and material as can be replaced from time to time. Before discussing the subject of brake types or design, the writer considers it advisable to men-

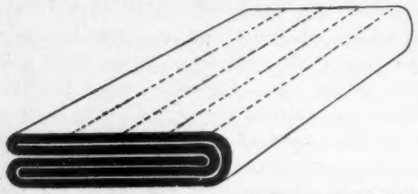


FIG. 1—ASBESTOS FABRIC SHOWING HOW ASBESTOS YARN WITH A WIRE CENTER IS USED

tion the characteristics of some of the materials used for the friction surfaces.

Brake Surface Materials

Wooden blocks have been and are still used in certain classes of brakes, but they are, so far as the writer recalls, not used at present on any cars. The coefficient of friction between certain woods and steel or iron is fairly high, but the wear is quite rapid and in addition to the fact that water affects wood detrimentally, it is evident that it is unable to withstand any amount of heat such as it would be sure to get on motor car brakes.

Use of Metal Shoes

Cast iron, steel and bronze are sometimes used as the friction shoes or surfaces. Perhaps the greatest objection to their use which can be given is that they are inclined to cut or seize when used on a steel brake drum without lubricant. If oil or grease gets on the surface, the coefficient of friction is reduced to a point where it often leads to grave consequences.

Some leather has been used for brake liners or facings, but under ordinary conditions it soon succumbs to the effects of heat, first shrinking and hardening and then literally burning. It also is greatly affected by water or oil. So-called camel's hair has been used to a certain extent, but it, too, is unable to withstand any great amount of heat.

Among liners with asbestos base come perhaps most of the facings used at the present time and for this reason they will be discussed more in detail. In the first place it will be at once realized that asbestos alone has little strength, although it has great power to resist heat. It is easily pulled apart and, unless assisted, will fail by raveling or separating. To give to it tensile strength, it is customary to form the asbestos into yarns having a brass wire for a center or core. Incidentally this wire greatly assists in decreasing the amount of wear. These yarns are woven in various ways to form straps of suitable dimensions for the brake linings. Fig. 1 illustrates perhaps the most simple form in which the yarns are woven the same as canvas or cloth. This is folded so as to make a thickness of several layers and is then sewed together by lengthwise rows of stitching, thus forming a compact strap suitable for riveting to the brake band.

Fig 2 shows diagrammatically the end section of another form of weave in which there is no stitching as in the first, but instead there is what amounts to practically two layers of asbestos cloth between which are a number of lengthwise strands, inserted in order to give the desired thickness. The whole is held in compact form by numerous strands or yarns which are woven back and forth between the outside layers. If this type or style of weave is used, the band should be soaked or saturated with some substance which will not vaporize at the temperature which the band may be submitted to. Otherwise it will be found that the outer layer will first wear off, thus exposing the lengthwise center strands which no longer have any protection and are therefore liable to roll up or catch and strip out instead of resisting wear as was intended they should.

BLUE BOOKS FOR 1911

Announcement is made by the Automobile Blue Book Publishing Co. of Chicago and New York that its four route books, covering the entire country from a motoring standpoint, is about ready for circulation. As formerly, the No. 4 book is published in Chicago and shows considerable improvement over last year's. In the 1911 No. 4 there are 528 separate and distinct routes written, as against 350 last year. Road data for 49,000 miles is furnished, 17,000 miles of which is absolutely new. Of this 7,596.5 miles is in Illinois, 7,728.1 in Indiana, 5,337 in Iowa, 9,074.3 in Ohio, 4,374.4 in Michigan and 7,456.9 in Wisconsin and Minnesota. Every Michigan route has been rewritten, the Blue Book car traversing each one and securing fresh information. Particular attention has been paid to Wisconsin, while routes on the Pacific coast also are given that are worthy of attention. A feature is a trunk line map which greatly facilitates the quick laying out of routes. The book has been increased from 864 to 1,120 pages.

The New Jersey section, No. 3, will be ready for delivery about the middle of April and will contain more touring information, including new maps, additional routes, hotel and garage statistics than has ever been compiled before. As a special feature the volume will contain complete, with maps and detailed information, a large number of popular southern tours, covering Florida, Georgia, Alabama, the Carolinas and other districts which have been growing deservedly popular among motorists within the last few years. No list of southern tours in so extensive a manner has ever been compiled before. Reliable data regarding the condition and nature of the roads has been gathered under the personal inspection of the Blue Book's experts who have covered the routes in motor cars.

In other brands, all of the lengthwise strands are so woven together as to form what might be referred to as a homogeneous mass or strap that cannot be in any way considered as a number of separate layers since the strands are so interwoven as to be almost inseparable. It will be evident that for the most severe

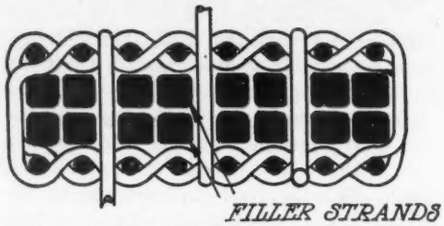


FIG. 2—END SECTION OF ASBESTOS FABRIC SHOWING HOW TWO LAYERS ARE USED

usage this last weave is especially suitable since the wearing away of the outer portion in no way allows the inner portion to shirk taking its proper part of the wear.

Binders to Be Used

As said before, the asbestos when unassisted will tear apart readily, hence it is customary to saturate the entire weave with some sort of binder which will cement the fibers together and at the same time have a beneficial effect upon the action of the liner. The exact composition of these binders is kept more or less secret by the various manufacturers, since it is what determines the principal difference between some of the best grades of liners. The principal constituents of these binders seem, however, to consist of some rubber by-product, pitch, resin, asphalt or some similar substance.

Action of Binders

The way in which the binders affect the performance of the brake in actual use is of the utmost importance to the user and designer. By many it is assumed to be simply some substance added in order to increase the coefficient of friction. But it should be remembered that there are other desirable features which a good liner must possess. All brakes should receive a certain amount of lubrication in order to make them act smoothly and to prevent them from squeaking and cutting. At the same time it is evident to all that too much lubrication will defeat the main purpose for which the brake is designed, hence the liner should contain as a part of its make-up a substance which will not only act as a binder for cementing the different strands together, but will maintain a sufficiently high coefficient of friction, will provide the desired amount of lubrication and will be at the same time unaffected by oil, water, etc., which naturally would be expected to get onto the brakes at times and otherwise cause the coefficient of friction to vary to a great extent. Neither must it be forgotten that the binder should not be affected too much by the heat which is to be expected in service.

(To be continued.)

Insurance Companies Make New Rates

In Chicago the Increase Is Considerable—Companies Make a Careful Study of Situation and Draw Up Table That Makes Interesting Study—No Risks Taken on Cars Made Previous to 1907, While Equipment Must Be Insured in Separate Policy, It Is Decreed

CHICAGO, April 3—Insurance rates in Chicago have jumped considerably since last summer and the figures now quoted on gasoline cars for protection against fire and theft are rather startling. Where a year ago most companies were willing to issue insurance on the flat rate of $2 per $100 to owners of cars, now there is a bewildering schedule out that puzles even the insurance sharps to interpret. Still, it is plain on the face of it that in some cases the prices have doubled. The cheapest rate is $2.25 per hundred and the highest $4. One instance is noted of where one owner paid $20 for a $1,000 policy on a 1909 car last year who now has to pay $21 for $600, while a $500 policy for the same car would cost $20. Besides that the equipment, such as blankets, lamps, etc., has to be insured separately.

The New Schedule

The new schedule specifies that insurance on 1912 cars will not be issued for less than 50 per cent of their actual value. Cars of the vintage of 1911 cannot be insured for less than 50 per cent and not over 80 per cent. The 1910 category is divided. Cars listing from $2,500 to $6,500 can be insured for not less than 50 per cent and not over 70 per cent, while for the cars from $500 to $2,500 a policy will not be granted for more than 60 per cent of the value. In the 1909 class it is 50 per cent for the $3,000-6,500 cars and 40 per cent for those under the $3,000 mark. Insurance will be accepted on 1908 cars valued at more than $2,000 up to 40 per cent, while cars valued at less than that cannot be insured. Not more than 30 per cent of the value will be granted on 1907 cars worth more than $5,000, while all models previous to 1907 are prohibited.

Some Risks Declined

Extra bodies have to be insured separately as in the case of equipment and at the same rate as charged for the cars to which they belong. The insurance companies decline to take risks on assembled cars, steamers, home-made cars, experimental cars, cars of a type no longer made, cars not fully paid for and second-hand cars in the hands of dealers. Risks also are declined on motor cycles. In the case of livery and renting cars the companies will consider them and if the risk is approved the policy will be written at an additional rate of ½ per cent. No car will be written for more than its cost to the assured.

Dealers taking out insurance will be charged the basis rates for new cars. A pro rata cancellation will be allowed with a minimum charge on each car of $1. No risk will attach until reported and accepted by a duly authorized agent of the company.

Where a car is kept in a private garage or private stable the companies are willing to shave ¼ per cent off. Privilege is granted to operate the car and to house it in any other building for a period of not exceeding 15 days at any one location at any one time providing the car is en route, visiting, or being cleaned and repaired.

Low Rate on Electrics

Rates on all models of electrics are quoted at 2 per cent, subject to a deduction of ¼ per cent for the private garage warranty and on private pleasure cars only. Commercial cars are written at the scheduled rates and for the amounts provided for pleasure gasoline cars but not subject to the deduction for private garage warranty. A study of the accompanying table gives an idea of the rates now prevailing in Chicago.

Amt. for Insurance Including Additional Equipment But Not Extra Bodies Subject to "Instructions and Limits"	ORIGINAL LIST PRICE OF MOTOR CARS WHEN NEW, NOT SECOND-HAND EXCLUDING COST OF ADDITIONAL EQUIPMENT AND EXTRA BODIES												
	6500 and Up	5500 to 6499	4500 to 5499	3500 to 4499	3300 to 3499	2500 to 2999	2000 to 2499	1500 to 1999	1300 to 1499	1100 to 1299	900 to 1099	700 to 899	500 to 699
	A	B	C	D	E	F	G	H	J	K	L	M	O
6500 and Up	2¼												
5500 to 6499	2¼	2¼											
4500 to 5499	2¼	2¼	2¼										
3500 to 4499	2⅜	2¼	2¼	2¼	2½								
3250	2½	2⅜	2⅜	2¼	2½	2½							
3000	2¾	2½	2½	2¼	2½	2½							
2750	3	2¾	2⅝	2⅜	2½	2½	2½						
2500	3¼	3	2¾	2½	2½	2½	2½						
2250	3½	3¼	3	2¾	2½	2½	2½	2½					
2000	4	3½	3¼	3	2¾	2½	2½	2½					
1750		4	3½	3¼	3	2½	2½	2½	2¾				
1400 or 1500		4½	4	3½	3¼	2¾	2½	2½	2¾	2¾			
1200 or 1300			4½	4	3½	3	2¾	2½	2¾	2¾	3¾		
1000 or 1100				4½	4	3½	3	2¾	2¾	2¾	3¾	2¾	
800 or 900					4½	4	3½	3	3	2¾	3¾	5¾	2¾
600 or 700						4½	4	3½	3½	3	3	2¾	2¾
500							4½	4	4	3½	3½	3¾	2¾
400								4½	4½	4	4	4	4
Additional Charges on 1907 Models. See "Instructions and Limits"	nil	nil	nil	nil	nil	nil	nil	¼	¼	¼	¼	¼	¼

Policies for $3500 or less amount of insurance must be issued only for amounts specified in this column; for example if owner desires insurance for $2300, policy must be either for $2250 or $2500

DIRECTIONS FOR ASCERTAINING RATES

Make sure that the amount of insurance desired is not in excess of value or more or less than the limits as provided under Instructions and Limits.

Find original list price not including additional equipment or extra bodies in List of Prices at top of scale; follow down that column until opposite amount in column at left, corresponding with amount of insurance desired.

Example 1—Assume a 1908 car, original list price $3,000. Insurance wanted $2,000. 1908 model under column E, may be written for not exceeding 60 per cent, or $1,800. Find column E, run down until opposite the amount nearest and not exceeding $1,800 under Amount for Insurance—i. e., $1,750, 3 per cent will be found to apply.

Example 2—Assume a 1910 car, original list price $1,400, see column J. Car has $200 worth of equipment; assured desires $1,500 insurance. Run down column J until opposite $1,500 in Amount for Insurance column. Rate of 2¾ per cent will be found to apply.

Always bear in mind that extra equipment or extra bodies do not take the car out of column indicated by list price, as in above example.

INSTRUCTIONS AND LIMITS

These rates apply to private pleasure gasoline cars only. Amounts to be insured must not be more than actual value and be limited as follows: All values and percentages include original list price of car and equipment as indicated above.

Model	Column	Insurance
1912	A to O	Not less than 50 per cent
1911	A to O	Not less than 50 per cent and not over 80 per cent
1910	A to G	Not less than 50 per cent and not over 70 per cent
1910	H to O	Not over 60 per cent
1909	A to G	Not over 50 per cent
1909	H to O	Not over 40 per cent
1908	A to H	Not over 40 per cent
1908	J to O	Prohibited
1907	A to D	Not over 30 per cent
1907	F to O	Prohibited; also all models previous to 1907

WINDSHIELD ON DOOR

OKLAHOMA CITY, OKLA.—Editor Motor Age—It would be a pleasure to the motoring public if the various windshield manufacturers would make hinged additions or extensions to their shields to protect occupants of the car from the side winds. The extensions should be of glass, about 18 inches high, and extend from the windshield back to the rear of the seat. What is more joy than to sit in a motor car with the top thrown back, enjoying the spring sunshine, viewing the scenery from all directions with perfect comfort, the windshield with its extensions giving absolute protection against the wind and dust? One other convenience is needed, an enclosed winter top which could be placed upon a torpedo body.—Reader.

A possibility along this line is illustrated herewith in Fig. 1. The side glass hinges to the end of the windshield proper and fastens to the end of the seat. It is possible with such an arrangement to cut off entirely all cross air currents.

NEW HORSEPOWER FORMULA

Prairie City, Ia.—Editor Motor Age—Will Motor Age kindly answer the following questions through the Readers' Clearing House:

1—What is the accepted horsepower rating formula which takes into consideration the stroke as well as the bore of the motor?

2—If used under the same conditions, which of the two following types of motors would be the more powerful: A four-cylinder, 4-inch bore and 4-inch stroke, high-speed motor with valves inclined at 45 degrees in the cylinder heads or a four-cylinder, 4-inch bore and 4½-inch stroke, radical speed motor with all valves on one side and an offset crankshaft?—Loren M. Jenks.

1—A horsepower formulæ which takes into consideration piston stroke is

Horsepower = $0.197d\ (d - 1)\ (r + 2)\ N$ in which

d = cylinder diameter in inches,

r = stroke divided by diameter,

N = number of cylinders.

One example will explain this formula. Take a motor with 4-inch bore and 5½-inch stroke, of the four-cylinder type. For this the equation becomes:

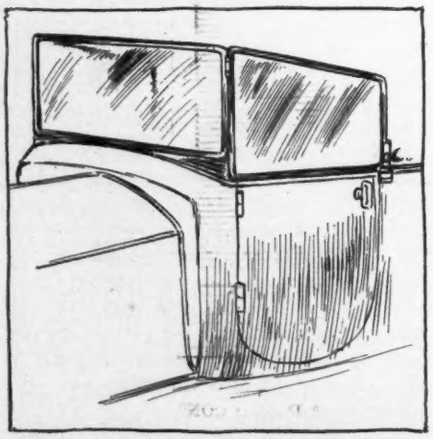


FIG. 1—A WINDSHIELD ON THE DOOR

The Readers' Clearing House

Horsepower

$$= 0.197 \times 4\ (4 - 1)\ \left(\frac{5\frac{1}{2}}{4} + 2\right) 4$$

$$= 0.197 \times 4 \times 3 \times \frac{27}{8} \times 4$$

$$= \frac{0.197 \times 4 \times 3 \times 27 \times 4}{8}$$

$$= 31.914$$

This formula has been devised by a special committee of the Incorporated Institution of Automobile Engineers of Great Britain. It does not consider the stroke as a separate factor, but uses r, which is the ratio of stroke to bore. It was contended by the committee which made up this formula that permissible piston speed in feet per second varies not with the absolute length of the stroke but with the stroke-bore ratio.

2—It is impossible to answer this with any degree of accuracy. The diameter of the valves in inches is a big factor, as also is the contour of the cams for lifting the valves. The timing is an additional factor. The amount of offset of the crankshaft is also a factor. Roughly speaking, the valve-in-the-head type should give a little more power.

FITTING NEW PISTON RINGS

Nashville, Tenn.—Editor Motor Age—Through the Readers' Clearing House I would like information on how to put new rings in the cylinders of my 1909 model 10 Buick.—M. E. Grupp.

Clean the grooves on the piston thoroughly and then test each ring to see that it will fit in its groove. It is not necessary to spring the ring over the piston for this, but it can be done by turning the ring all the way around in the groove. The ring should just fit easily. If it is tight it should be laid flat on a piece of emery cloth and rubbed down. Then test the ring to see that it will fit the inside of the cylinder. The ring should be pushed at least 1 inch up into the cylinder and sprung outward with the fingers. If the ring is too large it will be shown by the edges of the ring being out of line at the angular slot. This can be remedied by removing some of the metal from the edges of the slot with a fine file. See that there is a slight space left between the ends of the ring to allow for expansion.

The bottom ring should be placed in position on the piston first. It may be possible to open it sufficiently to pass it over the connecting rod; if not it must be passed over from the top of the piston, over the top grooves and dropped into the bottom groove, and followed by the next ring. Place the rings so that the slots are equidistant around the piston and then replace the cylinder. This operation really demands two pairs of hands, one person to drop the cylinder into position and the other to close the rings in as they enter the cylinder.

EDITOR'S NOTE—To the Readers of the Clearing House Columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

OIL IN THE EXHAUST

Bloomington, Ind.—Editor Motor Age—I am seeking the following information through the Readers' Clearing House columns:

My four-cylinder motor car of popular make is causing me trouble because of the waste of oil from the crankcase, through the exhaust. A ⅜ inch breather pipe tapped into the crankcase opposite the front cylinder was part of the equipment, but it fails to render proper service. Would it be advisable to replace the present breather with one larger until a sufficient size should be obtained, or add others of the same size, until cure is effected?

Can Motor Age recommend a reliable breather system, combined with filler for crankcase, together with indicator showing quantity of oil in crankcase?—Subscriber.

We do not quite understand your case. In the first sentence you state that the motor is causing you trouble because of a waste of oil from the crankcase through the exhaust and in the next sentence that the breather pipe does not give satisfaction. In Motor Age, issue of March 9, page 28, there was a breather pipe designed which should be satisfactory. It is easy to install and is a satisfactory pipe as well. It would be only possible to attach a float to serve as an oil indicator when using a new base on the crankcase, so that the only satisfactory scheme you can follow is to thread a pet cock into the side of the crankcase at the point of desired oil level, so that when you pour oil you can open this pet cock so that all above this level can be turned back again into the can. In this way you will be sure of not having too much oil. If you are getting too much oil through the exhaust, undoubtedly the splash level is too high in the crankcase. It may be the piston rings are not tight enough and so allow too much oil to work up past them and get into the mixture, and pass out through the exhaust valves. If after re-

Clearing House

EDITOR'S NOTE — In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

ducing the oil level you still get too much oil a good solution is putting light baffle plates in the lower or open ends of the cylinders. These baffle plates simply have a horizontal slot for the connecting rod to work through.

CLEANING THE RADIATOR

Lancaster, Wis.—Editor Motor Age—Please answer through the Readers' Clearing House what is a good solution for cleaning out a water circulation other than the radiator. My Ford radiator leaked last year, and I used different preparations to stop it, such as cornmeal, ground rice, starch, etc. I am going to install a new radiator and before doing so wish to thoroughly clean the entire water circulation around the engine, the waterjacket having rust scale and sediment in it. I can connect the hose from the top to the bottom of the radiator connections and circulate it by turning the engine by hand, as it is pump circulation.—Subscriber.

A suitable mixture is made by dissolving 2 pounds of crystals of soda to each gallon of water needed in the cooling system. The best method of using this solution is to pour it into the radiator, run the motor for a few minutes, then leave it over night. The following morning flush the entire system as you suggest.

LIGHTING BY STORAGE BATTERY

Kiel, Wis.—Editor Motor Age—Will two 16-candle power headlights with 8-inch parabolic reflectors operated by a 6-100 battery give good service for country driving at night? Could I connect up two 6-60 batteries and get the same service? Is the light satisfactory for country use?

2—How many hours of good serviceable light could I get from the above outfit?

3—Would it be much more expensive than a gas tank at 50 cents for recharging a 6-100 battery?—M. D.

1—Two 16-candlepower tungsten lamps will take 7 amperes of current on a 6-volt circuit and the 100-ampere-hour battery would need recharging after each 14 hours' use. Two 60-ampere-hour batteries could be connected in multiple and give about 2 hours' longer use. This arrangement would be satisfactory, although with good reflectors two 12-candlepower lamps will furnish all the light you need and the batteries will last half again as long.

2—A lighting system of this kind will be serviceable for country driving.

3—The cost of installing the electric-lighting system will be nearly twice as much as for the acetylene tank and lamps, but will be much less expensive to maintain. Assuming that you use a 100-ampere-hour battery with two 12-candlepower lamps, the outfit will cost about $70; it will need to be recharged after each 20 hours' use, at a cost of anywhere between 50 cents and $1, say 75 cents; that is, it will cost about 3¾ cents an hour. The acetylene system will cost between $40 and $45 to install and will supply the lamps for 40 hours, when a full tank can be obtained for $2, making the cost of lighting 5 cents an hour. If you care to add a small electric generator to the storage battery outfit at a cost of about $100 the batteries always will be charged and the cost of charging will be eliminated.

REO MOTOR OVERHEATS

Cleburne, Texas—Editor Motor Age—Will Motor Age kindly advise me through the Readers' Clearing House as to the following: A friend of mine has a two-cylinder Reo touring car of a late model. After traveling about 2 miles the engine gets very hot. The water hardly gets warm. The water pipes are not stopped up and we always keep a full tank of water. The pump gears have been in only a month or so. It is well lubricated, and the engine gets plenty of oil. When the car is in high gear and going at a low rate of speed it will hit every explosion, but when I advance the spark it will miss. The timer is clean, good spark plugs, good wiring, good adjustment on the coil, new batteries, yet I cannot find short circuit anywhere. Can Motor Age tell what the trouble is?—A Driver.

In view of your statement that the motor overheats badly and the water in the cooling system remains cool, it seems probable that there is either a stoppage in the pipes or radiator or else an air lock in the system. There are several ways in which this air lock or air pocket may form. Where there is an air lock air has been drawn into the water pipes and forms a complete cushion between two parts with water on each side, and prevents its circulating. A frequent cause is putting a fresh supply of water in the tank when there is a small amount of water moving in the pipes below the level of the tank. The water rushing into these pipes prevents the air escaping and forms the air lock. This can be prevented by draining the system before refilling. Sometimes the gaskets at the joints squeeze into the pipes enough to stop the circulation. Make sure that the entire system is free of obstructions. There may be scales formed on the jacket walls or a heavy deposit of carbon in the cylinder.

The cause of the misfiring at high engine speed is probably that you are running with too rich a mixture, especially if the carbureter has an auxiliary air adjustment. The spring adjustment should be loosened a little. Then, again, the same results would occur if the exhaust valves are too weak. To try this, stiffen the springs by holding a screwdriver between the coils. If your batteries are weak you will miss at high speeds under load, but perhaps not without load.

CAREFUL VS. RECKLESS DRIVING

Sauk Center, Wis.—Editor Motor Age—There are two ways to drive a motor car and each way has its champions. Some drive with perfection in the way they handle the car, whereas there are others who seem to think there is nothing to do but get there. I think it would be a good plan to have a set of questions for the driver to answer before he could get his license to operate his car—there would be fewer accidents if this were the case.

I have ridden with drivers who seemed bound to wreck the car or throw out of the rear seat those who were so unfortunate to be pulled about the country with such men and boys, who by some mistake are permitted to drive such powerful machines, and must say I really was afraid I would be killed.

Not long ago I was invited for a ride of 140 miles with a relative and friend. We went over hill and dale with the carefulness of practical common sense; sometimes going almost with the speed of light, and at other times creeping at a snail's gait, so to speak. I said to the driver after the ride was over: "Martin, you handle that car fine."

"Not exactly fine, but in a manner to give pleasure to those who are in my care," he replied. "You see," said he, "I look out for all bad and dangerous places and take no chances, for in those

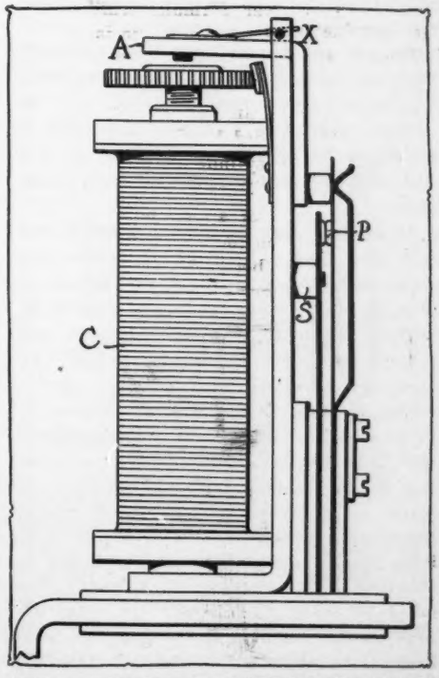


FIG. 2—THE DELCO CONTROLLING RELAY

very chances we usually get injured.''

He would make hills on high and do it so easily that it was a real pleasure to watch him operate the levers and wheel, and in turning corners he did it so neatly that one could not improve upon it. He was continually watching the road ahead of him; saw every team and made his calculations to pass in a most marvelous manner, while in passing through the small towns he slowed down to a very neat, easy speed so one could see what was doing, instead of going rip-at-a-shave, slide-around-corner gait, which was a standing advertisement of masterful experience at the wheel. Of course he cared for this car himself and knew it was in perfect condition, and the trip was free from annoyance and bother, making motoring a great pleasure.

I have seen a driver get busy as he approached a railroad crossing and make the parties in the back seat look like great bullfrogs as they bounced up and down, and would have been, undoubtedly, left on the track at the mercy of the train had the tonneau not been unusually high and caught them as they came down. Of course, they said nothing, but the driver never paid a bit of attention or would he have ever missed them if they had had the seat pulled out from under them.

It is very easy to handle a car if one will just take a little of his brains and make them do a little work, and be careful of bad places when he approaches them, slowing down to a reasonable gait and letting out when the roads permit. All cars are provided with positive control which is easy to use and a pleasure to those who are riding with you. I remember just recently a banker friend of mine was invited to take a ride in my car, and when he sat down in the seat—I was at the wheel—he said: ''I do not like these cars very well, as they are so rough to ride in,'' but after he had ridden a few miles he asked how it was that this car rode so very easily. He said he had been bumped in them so he did not like the make of cars, but when I explained that much was in the driving and not so much difference in the springs as he thought, he was much pleased and I think will buy one of this same style of car. He said he had ridden in one before and this one was like a boat on the water.

The secret of all this little bit of a pointer is only this: Be careful, look ahead, hear what is said to you, don't try to show off at the expense of pleasure, and when you let your guest out on the sidewalk drive up to it in a careful, easy manner, and above all do not bump into the curb and throw him out head-first, but bring the car to an easy, slow stop with clutch out and engines not racing.—A. D. Carpenter.

TIME OF IGNITION SPARK

Chicago—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions?

1—What is the correct position on a two and four-cycle motor of the piston when the spark begins with the spark lever fully retarded?

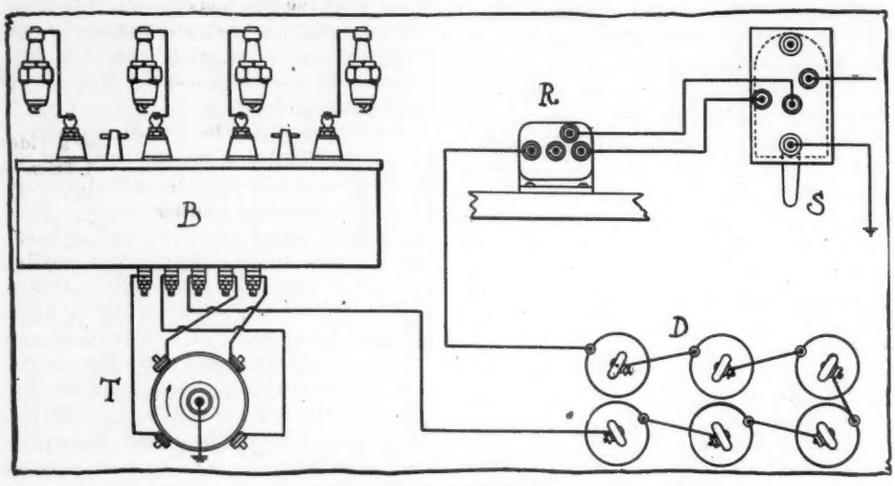


FIG. 3—WIRING DIAGRAM OF DELCO IGNITION SYSTEM

2—Are the flywheels on the up-to-date motors marked so that one can set his timer to begin making contact when the indicator points to a mark on its periphery or are they only marked to indicate the position of the valves?—A Reader.

1—Practice differs very much as to the correct position of the piston with the spark fully retarded. This depends on the speed and design of the motor, the higher speed motors needing earlier ignition. Many representative motor-car motors have a maximum retardation of about 35 degrees. The spark is retarded about the same in two-cycle motors as for four-cycle motors of the same speed.

2—Most of the motors have the flywheels marked for the valve timing alone, but the timing gears are marked in nearly every case.

LIKE POLES TOGETHER

Fargo, N. Dak.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following questions:

1—How are the magnets on a Bosch magneto, two bar, arranged?

2—Is one north pole placed on one side and the other north pole on the other side?

3—If so, how is a three-bar magneto arranged? Is it possible to change the poles in remagnetizing the magnets and how?

4—Will you kindly give a sketch showing how magnets may be recharged on a 110-volt current?—H. H.

1—The magnets of all magnetos must be arranged with all the north poles on one side and all the south poles on the other. If there were a north pole and a south pole on the same side the magnetic flux—that is, the lines of force that flow from one pole to the other—would practically all pass between opposite poles on the same side. The lines of force seek the shortest path and very few of them would pass through the armature to the poles on the other side, and there would be a very small magnetic field for the armature.

2—This is answered in reply to question 1.

3—All the north poles are on one side and all the south poles on the other. Yes, the poles of the magnets can be changed in remagnetizing them, but there is no reason for so doing. In fact, care should be taken that this is not done. The method is given in the Readers' Clearing House, Motor Age, March 23.

4—This method was described and illustrated in the Readers' Clearing House, March 23, in reply to an inquiry from Wellington, Kansas.

DELCO IGNITION

Sheldon, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the folowing questions:

1—What benefit if any is derived by an offset crankshaft, and is any power gained by it?

2—How is it some motor car manufacturers rate a 4 by 4-inch motor higher than a 4½ by 4½ in the four cylinder four-cycle machines?

3—Would it be advisable to put a 35-horsepower motor on a chassis that was built for a 25-horsepower machine?

4—Has the model G 1908 Cadillac an offset crankshaft, and what is the rating of the 4 by 4½-inch motor of the same make?

5—What is the meaning of a Delco ignition? Is it not better to have two separate independent ignition systems with two sets of spark plugs?

6—Which gives the more power, a spark plug in the cylinder head or over the valve in the L-type of cylinder?—Henry.

1—The relative advantages and disadvantages of offset crankshafts were discussed in answer to Ben W. Pinkley in the Readers' Clearing House, Motor Age, March 2. This point was further discussed and illustrated by F. J. Wilke in the Readers' Clearing House, Motor Age, March 16.

2—The difference in power rating may be due to a better design or higher speed in the smaller motor. The accepted horsepower formula, the A. L. A. M. formula, which considers only the cylinder bore at an assumed piston speed of 1000 feet per minute, gives the smaller motor a rating of 25.6 horsepower and the larger 28.9 horsepower.

3—If the chassis is well constructed and the new motor not much heavier than the old you probably would have little difficulty. Of course, the greater weight will shorten the life of tires and springs and, in general, it is not good policy to use a different motor than the one for which the chassis was designed.

4—The model G 1908 Cadillac has an offset crankshaft. All four-cycle, four-cylinder motors of 4-inch bore are rated at 25.6 horsepower by the A. L. A. M. formula.

5—The Delco ignition system gets its name from that of the manufacturers, the Dayton Engineering Laboratories Co., and is illustrated in Fig. 3. This system comprises three units, the coil box, B, a controlling relay, R, and a switch, S, in addition to which are the set of dry cells, D, and the timer, T, on the motor. The coil box, B, contains four non-vibrating induction coils, one for each cylinder of the motor. These units or coils are embedded in a heat-resisting compound which allows of carrying the coil box on brackets on the motor instead of on the dash. The relay, R, is merely a master vibrator which is wired in the circuit of the timer, and the four primary windings of the coil units. It is the master vibrator of the entire system.

It differs from the regular vibrator, however, in that it opens the primary circuit but once for each contact with the timer, and it is this single spark for each timer contact that makes it possible to use dry cells as the current source instead of storage cells. The switch, S, is made entirely of metal, the springs being tempered German silver, the contacts meteor steel. Connections are made by a cam movement. The switch cover is fastened from the back, making it imperative to remove the switch bodily before it can be tampered with. It has a lock and key as protection against theft.

The controlling relay, Fig. 2, has a coil, C, and has two windings, a primary and a secondary. The electric current, when the timer makes contact, passing through the primary winding, pulls the armature, A, down, separating the contact points, P, and opening the circuit. Immediately this is done the armature, A, would lift to its first position, making contact again and breaking it, as in the conventional vibrator, were it not for a second fine winding wound on the coil, C, but shunted around at S, which holds the armature, A, against the pole piece until the timer passes out of contact, at which time this shunt circuit is broken, releasing the armature and allowing the points, P, to come together and be in readiness to break the circuit when the timer reaches its next contact. This explains the one spark for each contact made by the timer segment.

Two totally independent ignition systems will of course prevent stoppages from ignition troubles, but it is a matter of dispute as to whether or not this advantage of the double systems offsets the extra cost of the duplication of parts.

6—This depends upon the design. You are referred to the communication from W. Fitzpatrick, Amboy, Ill., in the Readers' Clearing House for March 23.

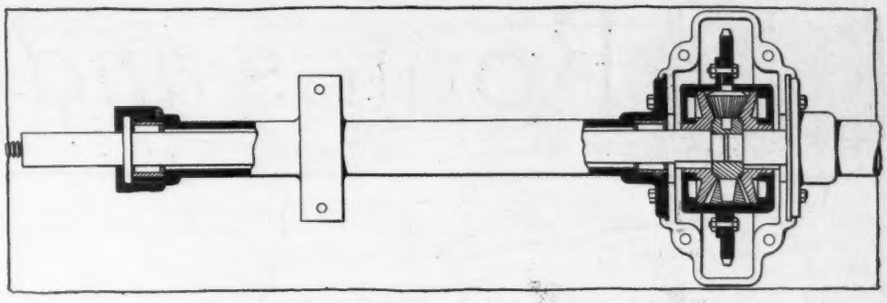


FIG. 4—CONSTRUCTION OF THE LINDSAY AXLE

THE LINDSAY REAR AXLE

Chicago—Editor Motor Age—I note in last week's issue the controversy regarding Lindsay's motor car patents on the rear axle, and would like to know the exact type of axle referred to and if it is a floating construction.—Reader.

The Lindsay patent on rear axles is illustrated in Figs. 4 and 5, taken from the official patent papers No. 748,760. In this axle there is an axle housing T and a driveshaft S. The driveshaft cannot be withdrawn without taking off the wheel. There is on the outer end of the driveshaft an integral flange, just at the outer end of the axle housing. This flange is used in order to retain the driveshaft in the differential at its inner end. The enlarged end of the axle housing is threaded and takes a cup-shaped cap. This cap being outside of the flange as illustrated and thereby preventing an endwise movement of the driveshaft S. It will be noted in this illustration that the bearings are between the driveshaft S and the housing T, whereas in the accepted floating axle construction of today these bearings are outside of the axle housing, the outer bearing between the housing and the road wheel, and the inner bearing carrying the differential, so that the driveshaft S in reality floats and is not supposed to carry any of the car weight.

In the Lindsay patents the driveshafts may be withdrawn without disconnecting the axle from the car, but it is understood the wheels have to be taken off before the axle can be withdrawn. The differential may also be removed without taking the axle housing from the car but in this case, also, the two road wheels would have to be removed before the driveshafts could be withdrawn.

FIRING ORDER IN SIXES

Kansas City, Mo.—Editor Motor Age—Through the Readers' Clearing House kindly give the order of firing in the folowing six-cylinder motors: Pierce, Peerless, Lozier, Locomobile, Thomas 70, Chadwick, Winton, Stevens-Duryea, Oldsmobile, Knox, Franklin and Pope-Hartford. —A Subscriber.

Below is given the order of firing in the six-cylinder motors you mention:

Chadwick	1—3—2—6—4—5
Franklin	1—4—2—6—3—5
Knox	1—5—3—6—2—4
Locomobile	1—5—3—6—2—4
Lozier	1—2—3—6—5—4
Oldsmobile	1—4—2—6—3—5
Peerless	1—3—2—6—4—5
Pierce	1—5—3—6—2—4
Pope-Hartford	1—5—3—6—2—4
Stevens-Duryea	1—4—2—6—3—5
Thomas	1—4—2—6—3—5
Winton	1—5—3—6—2—4

FLOATING REAR AXLE

Humphrey, Neb.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following questions:

1—Is the rear axle of the Hudson 33 a full-floating one?

2—If not, what is the difference between the Hudson 33 rear axle and a full-floating rear axle?—J. F. R.

1—The rear axle of the Hudson 33 is of the floating type.

2—The difference between floating and semi-floating rear axles was explained in the Readers' Clearing House, Motor Age for January 16, 1911.

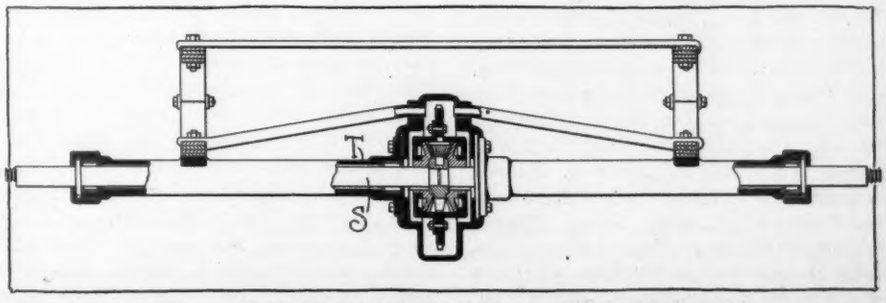
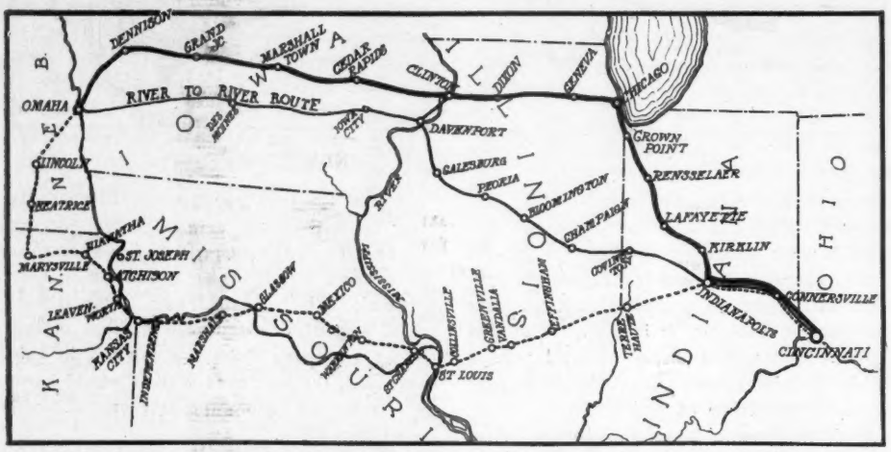


FIG. 5—THE LINDSAY REAR AXLE AND DIFFERENTIAL

Routes and Touring



A ROUTE FROM CINCINNATI TO OMAHA, NEB.; WITH OPTIONAL ROADS FROM INDIANAPOLIS. HEAVY LINE, PREFERRED ROUTE; LIGHT LINES, OPTIONAL ROUTES. FROM THE OFFICIAL AUTOMOBILE BLUE BOOK

In this department Motor Age will give information on routes and touring conditions. Suggestions on new or better routes are invited. All communications must be properly signed, as an evidence of good faith, but should the writer not wish his name to appear, he may use any nom de plume desired.

FROM BUFFALO TO MINNESOTA

ST. CLOUD, Minn.—Editor Motor Age—Through the Routes and Touring Information department will Motor Age give me the best and nearest route on a trip from Buffalo, N. Y., to St. Cloud, Minn., telling the towns through which we will pass and the road conditions? Can Motor Age give me the name of some road book that will give information about such a trip? —A. G. Whitney.

In the issue of March 30 in the Routes and Touring Information department you will find a trip outlined from Dayton, O., to Washington, D. C., then on to Chicago. For the itinerary from Buffalo to Chicago Motor Age would refer you to the latter part of the 2 weeks' trip from Washington, D. C., to Chicago. The distance is 578.3 miles and the road conditions all told are quite favorable. From Chicago to Madison, Wis., a distance of 149 miles, is over good dirt and pike roads to Janesville, and fair dirt road the remaining 40.2 miles. Travel through Highland Park, Half Day, Diamond Lake, Ivanhoe, Volo, McHenry, Richmond, Ill., Genoa Junction, Wis., Lake Geneva, East Delavan, Delavan, Emerald Grove, Janesville, Evansville, Rutland, and Oregon. The 149.3 miles of road between Madison and La Crosse are made up of a great variety of dirt, sand and some stretches of macadam, and you will pass through Pheasant Grove, Ashton, Springville Corners, Sauk City, Prairie du Sac, Baraboo, Reedsburg, Wonewoc, Union Center, Elroy, Glendale, Kendalls, Ontario, Cashton Station, Portland, and St. Joseph. Continuing northwest through La Crescent, Rideway, Witoka, Pleasant Valley, Winona, Stockton, Lewiston, Utica, St. Charles, Dover, Chester, Rochester, Oronoco, Pine Island, Zumbrota, Hader, Wastedo, Cannon Falls, St. Paul, and Minneapolis. Distance, 176 miles.

The Official Automobile Blue Book covers the section from Buffalo to Minneapolis very thoroughly, giving maps, names of garages, and hotels at which to stop, speed at which the motorist is allowed to travel, road conditions, mileage, etc. From Minneapolis to St. Cloud is 68 miles and the route takes in Robbinsdale, Osseo, Anoka, Elk River, Big Lake, Becker, and Clear Lake. This leg of the route is taken from the Minnesota State Automobile Association handbook and gives practical information. If you wish any special information, the motor clubs which you might call upon along your journey would be the Automobile Club of Buffalo, Cleveland Automobile Club, South Bend Automobile Club, Chicago Motor Club, Lake County Motor Club at Madison, Wis., and the Minneapolis Automobile Club at Minneapolis, Minn., where such information is available.

CINCINNATI-DENVER ROUTE

Cincinnati, O.—Editor Motor Age—Through the Routes and Touring Information department will Motor Age give me the best route from Cincinnati, O., to Denver, Colo.?—B. W. F.

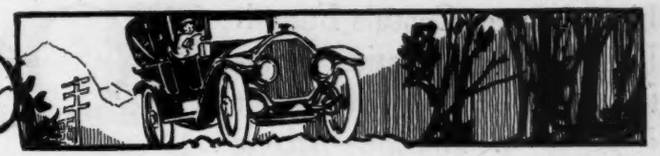
From Cincinnati go to Indianapolis, Ind., passing through Cheviot, Harrison, Cedar Grove, Blooming Grove, Connersville, Arlington, Carrollton, Indianapolis, over a rolling country through the White Water river valley. At Indianapolis, Ind., you will have the choice of three routes: The first via Chicago, Ill., Clinton, Ia., and Omaha, Neb., which route is recommended by J. P. Dods, Chicago representative of the Official Automobile Blue Book Co., 1200 Michigan avenue, is through Kirlin, Cyclone, Frankfort, Jefferson, Mulberry, Lafayette, Montmorency, Wolcott, Remington, Rensselaer, Virgie, Thayer, Shelby, Orchard Grove, Crown Point, St. John, Dyer, Hammond, South Chicago, Chicago; thence west to Omaha via Lombard, Geneva, DeKalb, Creston, Rochelle, Ashton, Dixon, Sterling, Morrison, Fulton, Clinton (Ia.), Dewitt, Grand Mound, Calamus, Wheatland, Clarence, Stanwood, Mechanicsville, Lisbon, Marion, Cedar Rapids, Belle Plaine, Butler, Marshalltown, Nevada, Ames, Boone, Grand Junction, Jefferson, Glidden, Carroll, Denison, Dunlap, Woodbine, Missouri Valley, Council Bluffs, Omaha. From Omaha to Denver Motor Age refers you to the map and communication on a Denver route which appeared in Motor Age, March 23 issue, page 22. Total distance to Denver approximately 1,458 miles.

A second choice from Indianapolis to Omaha is by way of Bloomington, Ill., and Davenport, Ia., thence over the river-to-river route into Omaha. This route is as follows: Indianapolis, Jamestown, Whitesville, Crawfordsville, Hillsboro, Veedersburg, Covington, Danville (Ill.), Catlin, Homer, Urbana, Champaign, Mahomet, Mansfield, Farmer City, LeRoy, Bloomington, Danvers, Mackinaw, Groveland, Peoria, Farmington, Maquon, Galesburg, Henderson, Alpha, Moline, Rock Island, Davenport. From Davenport to Omaha is what is known as the river-to-river route and the following are the cities passed through: Davenport, Durant, Moscow, West Liberty, Iowa City, Tiffin, Homestead, Marengo, Ladora, Grinnell, Newton, Colfax, Altoona, Des Moines, Adel, Dale City, Guthrie Center, Brayton, Atlantic, Avoca, Neola, Weston, Council Bluffs, Omaha. Total distance Cincinnati to Denver approximately 1,420 miles.

If you desire the first route via Chicago and yet wish to travel over the river-to-river route, when you reach Clinton, Ia., go to Camanche, thence through LaFolette, Princeton, Le Clair, Pleasant Valley to Davenport, where you will strike the eastern terminus of the river-to-river route, approximate total distance Cincinnati to Denver 1,470 miles.

The third route from Indianapolis to Omaha, as shown by the dotted lines and which you will undoubtedly find a rather warm one in July and August, is via St. Louis and Kansas City. The towns passed through on this third route are: Bridgeport, Belleville, Mt. Meridan, Manhattan, Brazil, Staunton, Seelyville, Terre Haute; thence continuing to St. Louis through Marshall, Casey, Greenup, Teutopolis, Effingham, Vandalia, Hagerstown, Mulberry,

Information



Greenville, Pocahontas, Highland, Collinsville, East St. Louis, St. Louis. From St. Louis on the route lies through Wellston, St. Charles, Cottlesville, Wentzville, Forestell, Warrenton, Jonesburg, New Florence, Montgomery, Martinsburg, Mexico, Clark, Higbee, Glasgow, Marshall, Higginsville, Odessa, Blue Springs, Kansas City, Lansing, Leavenworth, Lovemont, Atchison, Lancaster, Huron, Everts, Hiawatha, Marysville, Blue Springs, Beatrice, Cortland, Princeton, Lincoln, Havelock, Waverly, Louisville, Millard, Omaha. Total distance Cincinnati to Denver, approximately 1,585 miles.

For the route from Omaha to Denver you are referred to tne map and communication from J. T. Hughes covering a route from Kansas City to San Francisco via Denver.

THE KANSAS-DENVER ROUTES

Alton, Ill.—Editor Motor Age—I am a constant subscriber to Motor Age and would like information on the best route from Kansas City, Mo., to Colorado Springs, Colo., or either from Kansas City, Mo., to Pueblo or Denver, whichever route would be the best. I also would like the names of the first-class hotels on the route. I desire to leave about the middle of June. Will the roads and bridges be in good condition?—Joseph A. Degenhardt.

A suggested route would be that of the 1910 Glidden tour route, which is as follows: Kansas City, Mo., Rosedale, Merriam, Shawnee, Zarah, Monticello, De Soto, Eudora, Lawrence, Lecompton, Topeka, Silver Lake, Kingsville, Rossville, St. Mary's, Belvue, Wamego, Wabaunsee, Zeandale, Manhattan, Ogden, Fort Riley, Junction City, Detroit, Abilebe, Solomon, New Cambria, Salina, Bavaria, Brookville, Terra Cotta, Kanopolis, Ellsworth, Black Wolf, Wilson, Dorrance, Bunker Hill, Russell, Gorham, Walker, Victoria, Hays, Ellis, Ogallala, Wakeeney, Boda, Collyer, Quinter, Grainfield, Grinnell, Oakley, Monument, Page City, Winona, McAllaster, Wallace, Sharon Springs, Chemung, Cheyenne Wells, Ascalon, Arena, Sorrento, Arova, Mirage, Hugo, Genoa, Limon, Mattison, Ramah, Calhan, Falcon, Colorado Springs, Pikeview, Pring, Palmer, Lake, Sadalia, Littleton, Petersburg, Denver.

Some of the hotels on this route are Brown Palace, at Denver, Colo.; Antlers, at Colorado Springs; Hotel Lincoln, Hugo, Colo.; Kauffman house, at Oakley, Kan.; National hotel, Salina, Kan.

Should you desire to return to Kansas City by a different route, take the northern portion of this same Glidden route, leaving Denver by way of Sable, thence through Watkins, Bennett, Fort Morgan, Brush, Merino, Atwood, Sterling, Powell, Crook, Red Lion, Sedgwick, Julesburg, Brule, Ogallala, Paxton, North Platte, Gothenburg, Cozad, Lexington, Overton, Elm Creek, Kearney, Gibbon, Wood River, Grand Island, Central City, Havens, Silver Creek, Duncan, Columbus, Schuyler, Rodgers, North Bend, Ames, Fremont, Waterloo, Omaha, crossing east of the Missouri river to Council Bluffs, thence south through Glenwood, Tabor, Randolph, Shenandoah, Tarkio, Burlington Junction, Wilcox, Maryville, Savannah, St. Joseph, Halls, Rushville, Winthrop, Mo.; crossing again to the west side of the Missouri river between this point and Atchison, Kan., thence via Lovemont, Leavenworth, Lansing, Wallula, Piper, Kansas City.

The motorist has the choice of another route from Omaha to Kansas City, which is that laid out by the Official Automobile Blue Book, namely: Omaha, Millard, Louisville, Waverly, Havelock, Lincoln, Princeton, Cortland, Pickerell, Beatrice, Blue Springs, Wymore, Okato Station, Mo., Marysville, Honey City, Beattie, Axtell, Baileyville, Seneca, Oneida, Sabetha, Hiawatha, Everts, Huron, Lancaster, Atchison, Lovemont, Leavenworth, Kansas City.

The roads the middle or the last of June should be in very good condition. The bridges are all in good shape.

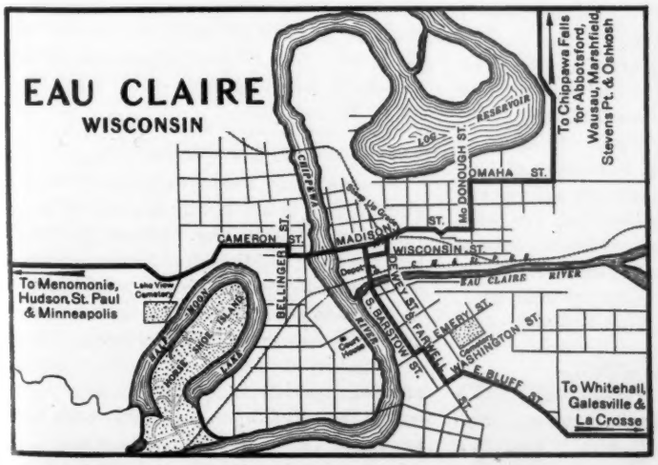
FOR THE SAKE OF THE NOVICE

Now that the touring season is opening, trips of less or greater length are being planned in all parts of the country. A large proportion of these will be undertaken by motorists who never before have been outside the confines of their own city in a motor car. Many of the readers of this department are looking forward this spring to their first tour. They view the coming experience with feelings of mingled pleasure and fear. The fear would be dispelled if they were certain their preparations would be sufficient to meet all the emergencies that will be encountered.

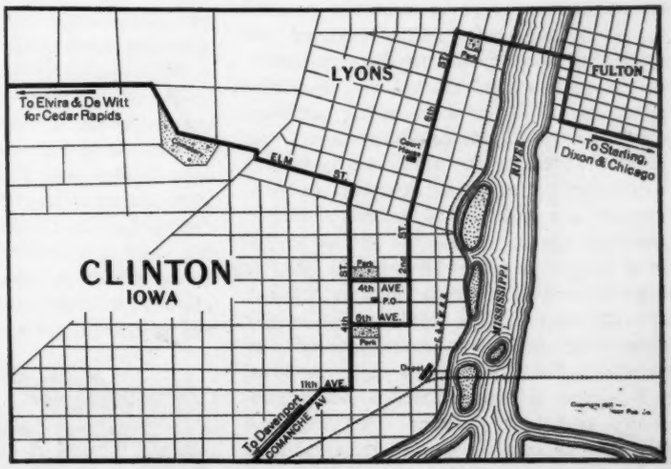
You, to whom touring in the country is an old story, who have learned through experience what to do and what not to do in getting ready for a trip, can assist your fellow motorists wonderfully by a few hints for the trip. For your suggestions and experiences in this field of motoring, Motor Age offers the columns of this department. It invites the readers to send any hints or observations dictated by their experiences or those of their friends.

It is often found on tours that many hardships were encountered that would have been avoided had not some seemingly insignificant detail been omitted when the preparations were being made for the trip. So the troubles of those to whom touring is not an untried field will help the motorist who is looking forward to his first trip.

Motor Age will publish one of these each week during the touring season.



TOURING ROUTES THROUGH EAU CLAIRE, WISCONSIN



ROUTES FROM CLINTON, IOWA, TO OUTLYING POINTS

PREPARED BY THE OFFICIAL AUTOMOBILE BLUE BOOK

Our Foreign

United States Consuls Furnish Interesting Information Relative to the Condition of Rubber Industry in Europe—How Business is Conducted and Best Way for Americans To Get a Share of It—Prices of Tires

RECENTLY the federal government sent letters to its foreign representatives asking for information relative to the marketing of tires. The result is a series of interesting replies published in the Daily Consular and Trade Reports, which contain information that should appeal to the American rubber industry. There are three letters from England. Consul Charles N. Daniels, of Sheffield, writes:

"Owing to the great variety of tires required and the necessity of being able to supply any call at short notice, the only way to secure a part of the English trade would be to establish one central headquarters for the whole country, and London without doubt would be the best place to locate, although Liverpool or Manchester might answer; but when a dealer in one of the provincial cities or towns of England wants anything in the line of stock his thought naturally turns to London, or town, as he terms it. This particularly applies to imported goods. It would be practically impossible for an American manufacturer of anything like rubber tires to do business direct with local agents in cities like Sheffield. The length of time required to fill a rush order would put their stock out of the running.

Business in Sheffield

"The local dealers are supplied from the manufacturer or manufacturer's agent with a stock ample to meet all requirements, and settlements are made monthly for all that are sold. Twice a year an account of stock in the hands of local agents is taken. At this time any particular stock in their hands found to be moving slowly or is unsalable is called in by headquarters and exchanged for something more suited to the locality.

"There is a good market here for these goods, one which is constantly growing, but the only way it could be successfully entered by a new tire would be by having a complete stock close at hand ready to answer any call at a moment's notice. Such an agency should be put in charge of a competent man who could familiarize himself with the needs of this market, then arrange for his local agents, supply them with such stock as they needed, and attend to the collection of their accounts.

"English and French tires are more generally sold here than are the American and the appearance of the latter in this market is due to the fact that the manufacturer has established an English headquarters in London, where a complete stock is carried from which to supply its various local agents throughout the country."

Consul Augustus E. Ingram, of Bradford, England, writes: "Great improvements have been made of late years in the manufacture of pneumatic tires, and with the constantly increasing use of commercial vehicles a considerable trade is being done in solid tires. Nearly all motor carriages are tired with nonskids, either on one or both driving wheels, and occasionally the front wheels. Side slip is one of the terrors of drivers, and manufacturers are continually experimenting to produce a tire which will overcome this trouble and also be resilient and puncture proof. Several are on the market, many of which overcome the difficulty to a greater or less degree. Both rubber and steel studs are employed for this purpose, or a combination of both.

"One of the latest inventions in this direction consists of a combination of steel and rubber. The steel is in the form of hairs as fine as those of the human head, capable of combination with the finest Para rubber, which is used to form a tread containing a network of the finest steel fiber. The result is that a tread is provided which is equally as resilient as rubber alone and practically impenetrable. It is said to have a nonskid surface, which adheres to the road in a manner said to be amazing to the experienced motorist, and has remarkable wearing qualities.

"Another tire recently introduced is for use on heavy vehicles. It is claimed that a twin tire will easily carry over a ton under ordinary conditions, whereas less than three-fourths of a ton would soon ruin a single tire. This allows of the heaviest bodies for touring cars being used with pneumatic tires, and the air pressure may be only half that required in a single tire large enough to support the same load.

Complaints as to Prices

"Complaints have appeared in the motor press of the high price of tires as now ruling, which is considered excessive. It is not, however, considered advisable to reduce the quality, as it is recognized that high-quality tires, though expensive, are far cheaper in the long run than low-quality, and give more satisfaction to the users, which is what is required. It is claimed by the manufacturers that present prices do not admit of further reduction and that the advance made last year did not represent the extra cost to them, as, while the raw material appreciated over 100 per cent, the advance to the public was not more than 10 to 20 per cent.

"By way of comparison the following table gives the prices of certain tires ruling at the present time and the prices at which they were sold during the two previous years, the sizes being given in millimeters:

	1908	1909	1910
815 by 105, grooved cover..	$33.78	$44.42	$40.14
815 by 105, tube	9.24	13.90	11.61
820 by 120, grooved cover..	37.46	54.86	88.42
820 by 120, tube	10.21	16.87	13.86
875 by 105, grooved cover..	36.43	47.59	42.82
875 by 105, tube	9.73	15.26	12.34

How Sales Are Made

"The custom of the trade when seeking to introduce a new line of tires is for the makers' travelers to go around to the various motor houses and induce dealers to handle their productions. If successful, selections are made of the sizes of tires most likely to be in demand, and supplies of these are forwarded to the dealer to be stocked on account of the manufacturer. On sales being effected the dealers order replacements and pay within a month. The stocks therefore which are carried by motor firms are generally the property of the manufacturers and are replaced every 6 or 12 months, the holders being responsible for their safe custody. Some firms may purchase outright, paying cash and receiving an extra discount.

"Discounts vary among the various manufacturers. The makers of a well-known and reliable tire will allow 10 to 20 per cent, while the makers of another tire not so well known to the public have to allow special discounts, varying, I understand, up to 50 per cent, as an inducement for pushing sales. In some instances, in addition to the ordinary cash discount, a rebate is made at the end of the season, based upon the amount of business, provided the terms of contract regulating the sale price to the public have been adhered to. One of the largest continental makers is said to allow on this basis from 10 to 20 per cent.

The Benefit of Advertising

"Large sums are spent annually in advertising in the motor press, and it is by this means that a tire becomes known to the motoring public. One large American house, which is now doing a good business in England, is reported to have spent a very large amount in advertising and in sending its travelers over the country, offering special inducements, the result being they can now command much better terms than formerly, when their products were comparatively unknown. Their tires are said to compare very favorably

Relations

The American Representatives Study the Tire Situation in England and Give their Countrymen an Idea of What Is Necessary To Do To Become Factors in That Country—Yankee Goods Well Liked

with the British and continental makes, but the sale in this district is small. In the list of Bradford firms handling motor tires the firm last named expressed a special desire to communicate with American manufacturers, as it is anxious to secure a good type of tire, which it would push in this market."

From Consul Church Howe, of Manchester, England, comes the following: "The Manchester district is the center of the rubber trade in Great Britain. All classes of rubber goods are manufactured here, and one of the most important branches is that dealing with rubber tires. Besides the firms manufacturing tires in the local works, all other British as well as continental makers have depots here, where they carry large stocks. American tires are also on the market, and from inquiries among the leading manufacturers and salesrooms in this vicinity I find they have met with a fair amount of success, notwithstanding the keen competition that had to be faced. There being no American depots located in Manchester, supplies are obtained from London.

How Trade Can Be Increased

"To secure a larger share of the trade, it is necessary for the American manufacturer to carefully study the requirements of this large and increasing market, on entering which he must adopt measures similar to those practiced by British and foreign makers, when there would seem to be no reason why the trade in American tires should not steadily and substantially increase in the near future.

"The English makers are constantly keeping their products before the public, advertising playing an important part in this direction. They also exhibit at the large motor shows frequently held in Great Britain, thus bringing themselves into actual contact with all branches of the trade, as well as with the general public.

"While these methods are somewhat expensive, American manufacturers must be prepared for such initial outlay before they can expect to take their place in the leading circles of the trade. With an experienced outside selling force, working from a central depot located either in London or Manchester, with branch stores in other cities as occasion and demand necessitated, American manufacturers can secure their full share of the trade.

Pointers for American Manufacturers

"The following trade pointers should be remembered by American tire manufacturers: The British market is being actively exploited by American motor car manufacturers, which creates a demand for American tires; the motor lorry, used for haulage purposes, is increasing in public favor here, of which the tires form an important item in its construction; the motor taxicab is rapidly coming into use, all of which are fitted with pneumatic tires of a steel studded design. This type of motor is taking the place of the horse cab in every city in Great Britain, and in the near future will give the rubber tire manufacturers a large trade."

Vice Consul Paul Knabenshue, of Belfast, Ireland, says: "With the increased use of American cars there is a corresponding increasing demand for American tires. British and continental tires are made according to the metric system of measurements, while the American tires are chiefly made according to the inch scale. This difference in measurement is such that American tires are not suitable for the British or continental wheels, nor are the continental tires the proper sizes for the American wheels, but I am informed by local motor-car dealers that American tires are considered more durable than either the British or continental makes. One of the many instances given was in the case of an American touring car, on which one of the tires had run over 17,000 miles. It is the local opinion that if the American manufacturers would make their tires to sizes suitable for local cars they would undoubtedly find a great sale in this country.

"The best method of entering this market would be to establish an agency in London, where an adequate stock of tires should be kept on hand. Subagencies should then be established in the various provincial towns, which would obtain their stock from London. The largest garage establishment in Belfast has expressed a willingness to accept an American subagency for this district."

Taking up the situation in Scotland, Consul Rufus Fleming, of Edinburgh, writes:

"In this district the trade in rubber tires is carried on by the manufacturing companies through local agents; in the case of foreign manufacturing companies, by a distributing house in Great Britain, and through local agents also. The agents for the sale of motor car, motor cycle and bicycle tires are firms dealing in the cars and cycles and accessories, while the agents for the sale of pneumatic and solid tires for carriages, cabs, etc., are mainly prominent carriage and cab builders. Except in a few instances, where firms have exclusive agencies for certain makes, the agents sell the products of many manufacturers, one well-known type of British motor-car tire being sold by nine firms in Edinburgh. To a comparatively small extent local firms, called factors, handle tires. These factors send out salesmen to push the trade among retailers in every part of the country.

"A factor is treated somewhat more liberally than an ordinary agent by the manufacturing or distributing companies in the matter of discounts, inasmuch as he puts forth efforts and assumes risks which an agent does not. There are now, I am informed, only two factors in this line in Scotland.

"The method of the manufacturing companies in dealing with the wholesale agents for motor car and other pneumatic tires is as follows: The companies supply the tires, the stock being checked every 30 days, and at the end of 6 months—some manufacturers 12 months—the remaining stock is removed and new tires supplied. Each of the principal pneumatic tire companies gives only one price for each article in its catalog, on which price the discounts to the trade are based. The common terms to the trade are 25 per cent discount on list prices, and 5 per cent for cash, within 7 days, or 2½ per cent at 30 days.

Sales of American Tires

"British rubber-tire manufacturers, it need hardly be said, have obtained a large proportion of the British trade, although French and German competition has been extremely keen in recent years, as indicated by conditions in this part of Scotland where the sales of foreign-made pneumatic tires have increased rapidly. Extensive advertising, in all forms, seems to be the most important factor in the trade. American motor car and other rubber tires, pneumatic and solid, are commended by dealers, both quality and price being satisfactory, yet they have not gained that share of the market to which they are entitled. It is not probable that American companies can improve their position, so far as sales here are concerned, by any other methods than those adopted by British and continental manufacturers. In other words, it is necessary to place the goods in the hands of the best local agents or factors, to deal with these agents or factors on no less favorable terms than the British firms give, and to devote as large a sum to advertising the tires as the importance of the market may warrant."

Oregonians Realize Utility of Truck

SAURER TRUCK ON LAVA CLIFF ROADS, NEAR SANTA FE

In Portland, Especially, the Merchants Have Taken Up the Power Wagon and the Horse Is Rapidly Being Discarded—Some of the Systems Employed By Business Houses

WITHIN the past year the motor car has gained much headway and started a veritable revolution in the delivery service of all the leading stores in Portland, Ore. Nearly all the merchants are planning to extend and enlarge their motor service, and indications are that in another year or so horse-drawn vehicles will be retained for use in the rough road districts and where it would be impracticable for motor cars to go.

During the holiday trade, a little more than 1 year ago, the Mier & Frank department store made its first test of motor delivery service. The result was so satisfactory that more machines were ordered within a few weeks. The firm now has six in all, doing the work of more than twice as many more horse-drawn vehicles, and plans to more than double the present service by the end of the year.

"All our cars are electrics," said Albert M. Stanton, speaking for the Mier & Frank store, "and we find them eminently satisfactory. The electrics are odorless and have no moving parts except the motor and chains, so it does not require a mechanician to operate one. The up-keep of an electric car is not more than one-half that of a single team, and it easily does the work of two wagons. Our machines all are electrics and of the Studebaker make; five of them are 1,000-pound delivery vehicles, and the sixth is a big 1,500 pound furniture van, which is giving us service incomparably superior to the old horse-drawn vehicle. As long as we have bad roads and mud-clogged streets, horses will have to be utilized, but as fast as the roads and the streets are put into reasonably good condition our motor service will be routed over them. We are eliminating the horse wherever we can."

The Olds, Wortman & King store adopted the motor for delivery service about 1 year ago and Mr. King is very enthusiastic over the results.

"We have both the electric and the gasoline machines," said he, "but the electric is proving the most satisfactory, and all our additions to the service will be of the electric type. Our electrics are Lansdens, of 1,500 pounds capacity. One of them will do the work of about two and one-half wagons, which means that it takes the place of about seven and one-half horses, for three horses are required for each wagon in order that the animals may have rest and be kept in good condition. The up-keep of the electrics is almost nothing, whereas the feeding and shoeing of horses is a considerable monthly expense. The motor also shows a saving in labor of more than 50 per cent. In point of service, the motor delivery is incalculably the superior, being quicker, cleaner and more dependable in every way. We still retain a large number of our horse-drawn vehicles—I think about twenty-three of them—but as these wagons wear out we will replace them with more electrics, and will keep only a sufficient number of teams to cover the long, rough routes."

The Lipman & Wolfe store is using the gasoline type of truck in its delivery service and H. D. Ramsdell, speaking for the firm, says its big Grabowsky is giving satisfaction.

"We make two deliveries every day with our machine, and it is doing the work of four horses and doing it better. We put the motor car on as an experiment about 8 months ago and it has proved a success. We have had no trouble at all with the motor car, with the single exception of once getting stuck in a mud hole, which might happen many times to a horse-drawn vehicle in the course of 8 months. This is a gratifying saving in

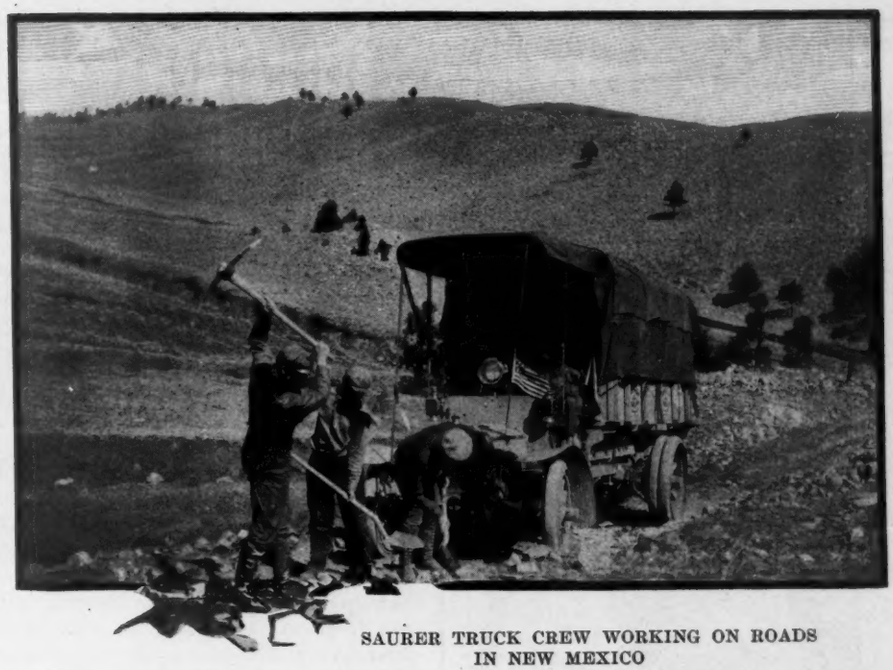
expense of up-keep, and the superiority of the motor service is demonstrated, in some way, almost every way.

Since the destruction of Roberts Brothers' horses and delivery wagons in the big Multonomah Club fire last July, this store has also been utilizing the motor cars, but only recently purchased a 1,500-pound White, which is still under experiment. The firm hopes soon to dispense with the service of a local motor delivery company and to install its own motor service.

So successful has the Auto Delivery Co., of Portland, Ore., proven in its work that similar companies are to be organized in featuring its line of tops for the 1911 season, the tops ranging in style from a Los Angeles, San Francisco and Seattle. These companies will each of them be capitalized at $250,000 and will equip themselves throughout with White trucks.

Manager P. E. Beam, of the Portland Auto Delivery Co., has resigned his position with the Portland company and has left for Los Angeles, where the first company will be organized. About half the capital in each of these three concerns will be Portland money, while the remainder will be made up in which the companies are established.

When the Auto Delivery Co. first started in Portland last summer it was believed it was in a fair way to drop a lot of money on the venture. Ten White delivery wagons of 1½-ton model were installed and a month later eight of the White 3 to 5-ton trucks. Within 3 months after trucks paid for themselves, and since then their installation it was claimed these have been a source of continual profit.



SAURER TRUCK CREW WORKING ON ROADS IN NEW MEXICO

Besides the regular delivery service maintained by this company a contract was taken for the hauling of the heavy iron pipe for the new Bull Run pipe line. It was in the successful completion of this gigantic task that the trucks first attracted attention, and since that time nothing but praise has been heard for them. As high as 7 tons of pipe were carried at a load on the truck and the trailer which was attached in about one-fourth the time which it would have taken a team to haul carried 3 tons.

Within the city limits extensive contracts for hauling structural steel, cement, lime and building material were secured and the motor truck given a test the like of which has not been equaled in the United States. In fact today this company has done much to place Portland on the map as the largest motor truck user in the country in proportion to the number of pleasure cars on the street, a fact which makes Portland proud.

Selecting Suitable Truck Problem Business Men Must Solve

BY H. K. THOMAS, MOTOR TRUCK DEPARTMENT, PIERCE-ARROW MOTOR CAR CO.

PERHAPS one of the most striking features of the motor truck is the comparatively small number of chassis types which are applied, in England for example, with perfect success to an almost limitless number of services. To enumerate all the trades or businesses in which mechanical traction is beneficial would be to index the industries of the world, and it is only when some exceptional condition exists that a motor truck is positively unsuitable.

The selection of a suitable size of truck is a matter for the expert in haulage problems, old methods particularly where horse traction has been in use, are not by any means necessarily any indication of what will be the most economical under more modern conditions, and specially does this have reference to the weight of load which can be carried.

At the present time the following sizes are those in general use in Europe, the figures giving the tons carried, exclusive of the body: 1-1½, 2-2½-3-4-5 and 7, the wheelbases for these varying from 7 to 14 feet; two others, which may be called special types, are largely and increasingly used, the three-wheel tri-car, carrying 300 to 500 pounds, and the fire engine in which the load is about 2½ tons, this including the complete turbine pumping outfit for 500 or 600 gallons of water per minute. Putting the last mentioned aside as being applicable for one kind of service only, an examination of the various uses to which they are put are legion.

The tri-car referred to is used for every kind of body from a rickshaw chair in Japan to a Maxim gun carriage in the British army field equipment, while the larger sizes of trucks proper fill the requirements of every kind of user—from the undertaker's hearse to the sight-seeing car and from the contractor's dumping wagon to the highly finished department store truck. Nor can any one trade or even one representative of such a trade always confine his requirements to the use of one size of truck, many breweries for example using 5-ton trucks for general delivery work and 1½-ton trucks for special delivery of rush orders.

The same remark applies to the mail vans employed by the British postoffice. The entire provincial mail is sent out of London over a radius of 100 miles in 3-ton vans with specially fitted bodies, to be redistributed in local districts from 1½-tonners plying on the highways between small towns.

On the closely congested traffic of the larger cities, the largest amount of merchandise per square foot of road surface can be carried in large trucks of 4 or 5 tons capacity, but this is to some extent discounted by the ease with which a small truck can force its way through the traffic.

From the users' point of view, the larger the load and the longer the journey, the lower the cost of handling, but the exigencies of rapid delivery, especially in the case of retail houses, will not always admit of the use of large units.

As a general rule it may be laid down that any concern embarking on motor traction on a large scale will have use for more than one size of truck, and special investigation of the conditions are required before arriving at a decision in this important matter.

Manufacturers' Communications

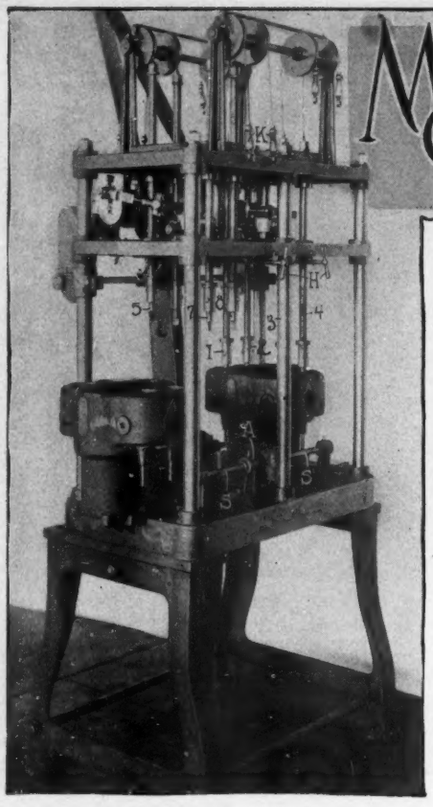


FIG. 1—SHOWING INTER-STATE CYLINDERS READY FOR VALVE-GRINDING

SECOND-HAND CAR PROBLEM

INDIANAPOLIS, IND.—Editor Motor Age—In motor car trade circles at present one subject of the business which is giving much concern is the second-hand car situation—a term applied to a curse which motor car dealers have largely brought upon their own heads. For considerable time there has been growing a habit of trading second-hand, even slightly used, cars for others, sometimes on the initiative of the owner, but more frequently at the instigation of some dealer.

A number of reasons may account for this, and the ultimate effect is somewhat problematical. But a few years ago the motor car was an imperfect experiment, first adopted by the sportsman and wealthy, both of whom desired to drive the latest car, regardless of expense or needlessness of changing. By wonderful development, by solving a transportation problem, and by contributing to the comfort and happiness of users, the motor car has lifted itself from ownership only by the wealthy and has forced the serious-minded, and the majority of buyers, to consider it entirely upon its merits.

Motor cars have become standardized in a general way, and if a number of the best regarded makes are considered it will be found that few fundamental or radical changes have been made in the last 3 or 4 years; and it is safe to assume that any changes which may be made in the future among the most highly developed cars will be confined to refinement of details rather than to alteration of structure. Thus, with certain improved motor cars the necessity or even excuse for changing annually has been removed. About the only basis for doing this with a modern high-grade car may be divided as follows: The car already owned may be too small or inadequate; it may be of a make not thoroughly developed and unsatisfactory; or the owner may desire to satisfy a whim of possessing a car embodying the latest details of style. In fact, the purchase of a new car when the old one is a part of the buying price can usually be traced to these reasons, with the frequent addition of an attitude influenced by dealers who have prejudiced the owner against his car, or have made such a flattering exchange offer that it becomes a business opportunity for the owner to dispose of a used car belonging to him at a figure that it would be folly to ignore.

The natural question, therefore, is why this second-hand car should appear so much more valuable to a dealer than to the owner, when its value, according to custom, greatly depreciates if it is sold, while its true worth, if it is a good car, is not affected. The dealer must take this method of merchandising voluntarily, through anxiety to do business at any hazard, distributing cars without reckoning on the first and very necessary business principle of making a profit; because of a desire to be a large distributor in a community with a hope of offsetting a loss by increased prestige; or in trying to make good with his manufacturer. There may be other reasons for trading and cutting prices, but they generally are open to this classification. It is strange that dealers forget that it takes so much to do business and sacrifice a large per cent of nominal and reasonable profit, harming themselves and their purchasers, while if they are required to market machines simply because of factory pressure the connection will soon become unhealthy, and both the dealer and manufacturer lose.

In considering a motor car, we must place on one side of the ledger first cost, cost of operation and maintenance, and depreciation if sold, and against these balance the service obtained from it. A well constructed and satisfactory car should be capable of traveling between 50,000 and 100,000 miles, and the most economical way to cover this distance is by continued service from one car, if for no other reason than that the first time a car is used it is made second-hand, and depreciates from 20 per cent to 25 per cent, not as a service article, but from a selling standpoint. Therefore, if several cars are used to travel a distance that could be covered by one good car, with depreciation reckoned on each of the several, the result will be more costly than with one car with depreciation in the first instance only and maintenance throughout its full usefulness.

This depreciation must be absorbed by someone, and when dealers realize that they are the losers when unusual offers are made, the occasion of so many second-hand cars will largely disappear. The moment the dealers see that their failure to make just profits is not due to the amount of factory discounts, but because they through eagerness to do business offer prices on second-hand cars which cannot be realized, just so soon will the traded-in cars be rated nearer their true value; and when this is done owners will perhaps realize that a car used slightly is of more value to the original owner than to anyone else and the temptation to dispose of cars will be largely eliminated.

The average dealer probably does not realize the small profit he is making when taking cars in trade, forgetting the necessity of finding two buyers instead of one, with a probable sacrifice to make an older car attractive to a new purchaser. If a clearing-house system is sometime inaugurated, where cars of various makes are scheduled, second-hand values will be established on a definite basis relating both to the man disposing of the car and the man who acquires it with the expectation to resell.—H. O. Smith, President Premier Motor Mfg. Co.

INTER-STATE VALVE-GRIDING

Muncie, Ind.—Editor Motor Age—Valve grinding is quite a problem in all motor car factories. Power grinding is generally used. In our factory a valve-grinding machine designed by J. F. Hybee is used. This machine grinds a set of eight valves at one time, the time ranging from 10 to 12 minutes. As high as 320 valves have been ground in 10 hours by this machine, which is operated by one man. The machine accomplishes the back and forward movement of hand-grinding. This motion is produced by ratchet and pawl combination, the four spindles required for turning the valve in each pair of cylinders being operated simultaneously. Fig. 1 shows one pair of cylinders in position, with the spindles 1, 2, 3, 4 in the driving position on the valves, and one pair, 5, 6, 7, 8, partially removed, showing the ease with which the cylinders may be interchanged.

The spindles are set over the exact centers of the valves to avoid side thrust to the stem. They may be raised single to inspect any valve without suspending the action of the other seven valves, or the four spindles required for each pair of cylinders may be stopped and raised to permit of changing the cylinder without stopping the other four spindles. The

lower end of each spindle is provided with a self-centering bit which readily engages with the slots on the upper side of the valve head. Should these bits become worn, they may be removed and new ones substituted.

The valves are raised from the seats at regular intervals by cams upon a shaft S which is located just under the ends of the valve stems. This permits the grinding element to work down under the surfaces which are being ground, and make it unnecessary to stop the machine to perform this function.

Fig. 2, showing the details of the operating mechanism, illustrates the belt for driving it, and a clutch is provided for each of four spindles, by means of which either set may be operated independently of the other. The clutches are engaged by means of the small T handles H. The small pull handles K on the ends of the cables which run over the pulleys at the top of the machine are used to raise the spindles and to hold them in this position while they are idle.

The cam shafts for each pair of cylinders are driven independently of the others, and are started and stopped with the spindles. They are chain-driven, the housing A for the chain being shown.—Inter-State Automobile Co.

The Motorists' Bookman

Cuban Impressions

FEW books on Cuba and its people give more comprehensive sidelights on the real Cuban life than that entitled Cuba, by I. A. Wright, a woman who lived in the country for years and was for much of that time engaged in journalistic work. The 500 pages are brim full of information, character sketches and word paintings. The information comes as from one who has lived with the Cubans, has seen them in every phase of their existence, has worked with them and has traveled over the land. Havana is depicted in a dozen chapters, its business atmosphere, its political status, its commercial position, its people, its houses, its streets, its points of interest, its hovels and its underworld. From Havana the author goes from end to end of the island, by coast trips and inland trips, giving impressions of life and conditions as seen. Chapters are devoted to the Isle of Pines, Santiago de Cuba, the south coast, Camaguey and other sections. To the tourist who has seen the island it is like the repetition of a childhood tale, abounding with interest, and to the tourist who contemplates visiting the island it is overflowing with information, real practical information, that would be useful every day of the trip. The Macmillan Co., New York.

Story of Great Inventions

For the motorist scientifically inclined it will be difficult to find a more interesting book than The Story of Great Inventions, which begins with the scientific inventions of Archimedes, who lived over 2,000 years ago and whom we may call the father of science. From that time until the present the silver thread of scientific invention is traced vaguely, it is sure, until the days of Galileo, almost 1,800 years after Archimedes passed off the stage, and from Galileo's time to the present day through the steady stream of scientific attainment. The book tells in simple truth the story of each invention; how Archimedes came to discover that a body submerged in water loses in weight an amount equal to the weight of the volume displaced, a physical law that is one of the big basic points of science; how Galileo invented the pendulum clock; how Otto von Guericke, the German burgomaster, invented the air pump; how Blaise Pascal, the Frenchman, conceived the hydraulic press; how Sir Isaac Newton worked out the law of gravitation; how James Watt unraveled the mysteries of steam and opened the door for that great force of the centuries; how Pieter van Musschenbroek invented the leyden jar, so useful in electricity; how Benjamin Franklin drew electricity by a kite from the clouds; the discovery of the electricity current by Aloisio Galvani, an Italian of Bologna; how Alexander Volta worked out the mysteries of the storage battery; the manufacture of the first electric dynamo by Michael Faraday; and countless other inventions which have been milestones in bringing the world along in its amazing march of progress during the last century, and right up to the present day in the discoveries of radium. The author, E. E. Burns, is instructor of physics in a Chicago high school. Harper & Brothers, New York.

Three Weeks in British Isles

"Three Weeks in the British Isles" is written for the purpose of giving information to those who can spare but a brief time in travel, giving much useful data on the points of interest that can be seen in the short space of 3 weeks, thus hoping to encourage many to consider the trip. The journey is confined to the British Isles, but in the opinion of the writer, John U. Higinbotham, enough can be accomplished to warrant one to undertake the journey.

The author briefly describes the points seen on such a trip beginning in London and embracing Manchester, Salisbury, Bath, Oxford, Kenilworth, Stratford, and York, in England; Edinburgh, the Trossachs, Oban, Glasgow, Ayr, Melrose and Abbotsford in Scotland, and Belfast, Londonderry, Galway, Kilkee, Limerick, Killarney, Cork and Dublin.

Although this short journey was made by rail, it will be found interesting reading by motorists who have time only for a hurried foreign tour, for how much more sight seeing can be accomplished and how many more miles covered by the motor car in the same length of time! The Reilly & Britton Co., Chicago. $1.50.

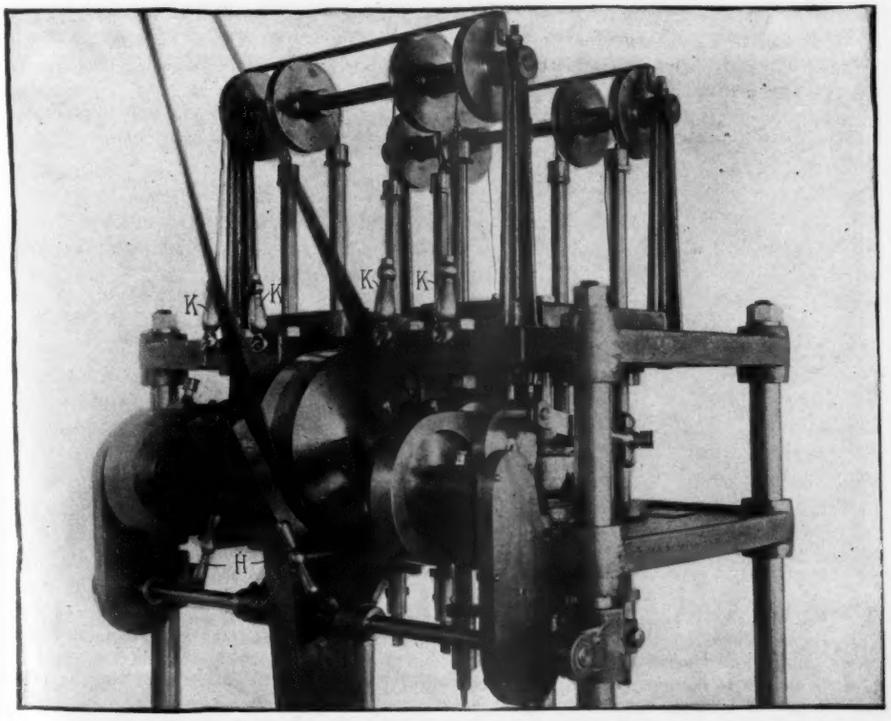


FIG. 2—SHOWING DETAILS OF OPERATION OF VALVE-GRINDING AT INTER-STATE FACTORY

CHINESE BLUE SKY

H. S. Honigsberg & Co., of Shanghai, China, represent the Studebaker interests in the Flowery Kingdom. During the past year they have sold almost 200 E-M-F and Flanders cars and believe their success largely is due to clever advertising. The above is a sample of Chinese motor car advertising.

From the

DE PALMA in Big Race—Ralph de Palma has been nominated to drive a Simplex in the 500-mile race at Indianapolis May 30.

Early California Event—The Los Angeles Times is promoting a reliability run from Los Angeles to Lakeside Inn. Dates selected are May 5, 6, 7 and 8. The distance is not great and the run will be more in the nature of a motor outing than a contest.

President Gives a Cup—W. E. Moyer, president of the Des Moines Auto Dealers' Association, has offered a loving cup as a trophy for the 1911 endurance run of the Des Moines motorists. Last year the Des Moines motorists took a 4 days' run to Spirit Lake and return.

Wisconsin Offers Prizes—The Wisconsin state board of agriculture at a meeting in Milwaukee last week decided to hang up purses aggregating several thousand dollars for the race meet to be held on the last day of the 1911 Wisconsin state fair at Milwaukee in September. This is the first time motor races will be held in connection with the fair, but the motor car is not recognized only in this way, for a show will be held in Manufacturers' hall throughout the week. Francis A. Cannon of Milwaukee is manager of both show and race meet.

Ohio Show on Increase—According to the records of the Ohio state motor car department, 9,600 more motor cars have been registered during the first 3 months of the year than in the first 3 months of 1910. Up to April of this year 26,450 cars were registered as compared with 16,850 during the same period of 1910. During the month of March 7,000 cars were registered, which is 1,250 more than in March, 1910.

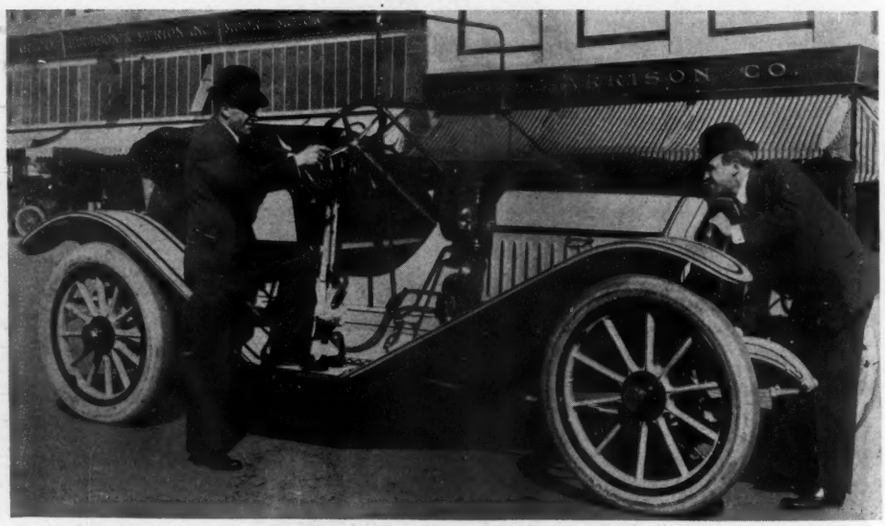
Booming Road Convention—Colonel Sidney Suggs, of Ardmore, Okla., state highway commissioner and the leading good roads booster of the state, is planning the most unique scheme for the representation of the state of Oklahoma at the good roads convention in Birmingham, Ala., May 23 to 26, in the history of good roads agitation. His plan includes having at least one motor car from each of the seventy-seven counties of Oklahoma assemble at Oklahoma City and make the run to Birmingham.

Hill Chosen President—Louis T. Hill has been elected president of the Sparta Automobile Club of Sparta, Wis. The other officers are: Vice-president, John Kemp; secretary, Fred Gross; treasurer, W. G. Williams. The club has joined the Wisconsin State Automobile Association and already is taking a leading part in the fight against adverse legislation now at its height in the legislature at Madison. Resolutions have been adopted favoring the lake-to-river highway from Milwaukee to LaCrosse, Wis., and a request made that Sparta be placed on the route. This doubtless will be done.

New York Truck Parade—Arrangements have been completed for the holding of the truck parade under the auspices of the Motor Truck Club of New York city on April 22.

Motorette's Progress—Last reports from the Motorette transcontinental party were from Charlotte, N. C. The three-wheeler, after a month on the road, had covered 1,000 miles, but the road conditions have been such that this is considered a great feat. The mud is of such consistency that the drivers suggest there is a fortune awaiting the one who will bottle it and sell it for glue.

St. Louis Bills Hill-Climb—The newly organized Missouri State Automobile Association will ask the American Automobile Association to sanction a hill-climb to be held in or near St. Louis, May 30. At a recent meeting these officers were elected: Howard W. Harrington, president; Ashley W. Gray, first vice-president; F. H. Stevens, second vice-president; A. S. Fout, secretary; O. H. Cook, treasurer. Three kinds of membership are provided for in the association—active, associate and state. Active members are drawn from motor trade circles, while the associate membership is open to all persons interested in motoring. State membership is to be obtained through the affiliation of some club or other organization of motorists with the association. The pushing of the good roads movement, watching legislation and



JUST CLEVER WORK BY A PHOTOGRAPHER

This illustrates a possible solution of the cranking difficulty. It is the idea of a San Francisco photographer who had heard much discussion of cranking and the desirability of finding some way of doing away with it.

"I can fix it so that you can crank your car from the seat," he said. "And I'll give you a photograph of yourself doing it."

Forthwith he produced the photograph used herewith, which shows Sales Manager F. L. Du Broy of the H. O. Harrison Co. stepping into his Peerless roadster, while at the same time sending what the photographer calls his astral body to do the hard work in front of the radiator.

Four Winds

promoting sports and pathfinding are among the principal objects of the association.

Helena Club Election—The Helena Automobile Club, of Helena, Ark., has elected the following officers: President, J. G. Knight; vice-president, Roby Harrington; secretary-treasurer, James A. Ward; governors, the officers above named and C. L. Moore, Jr., F. H. Woodin, R. E. Chew, Jr., E. S. Ready, Sam W. Tappan and B. L. Lyford.

Cleveland Run in July—The Cleveland News is laying plans for its second annual 3-day reliability run. The run will be under the auspices of the Cleveland Automobile Club and will be held in July. The contest and tours committee of the local club has sanctioned the event and application will be made immediately for the A. A. A. sanction.

Motor Tax Political Issue—One of the principal issues in the election for mayor in Moline, Ill., is the so-called motor car tax. The present mayor, Andrew Olson, candidate for reëlection under the commission form of government, has issued a statement to the effect that the motor car owners were leagued against him because of the tax ordinance which was passed during his administration. Prominent motorists deny this but allege that the mayor has not enforced the tax in all its provisions, overlooking horse-drawn vehicles which, according to the ordinance, also must pay an annual license. During the past season Moline motorists formed a temporary organization and went on record against the motor tax. It is said that $800 has been collected under this ordinance during the few months since it has been in force.

Country Home Proposed—The erection of a country club house for the Automobile Club of Rochester was one of the new ideas sprung at the annual meeting of the club at Rochester, N. Y. About $30,000 will be expended, it is believed, and the idea may be a fact within a year. The officers elected were: President, Charles J. Brown; vice-presidents, W. W. Hibbard and W. C. Likly; treasurer, W. W. Dake; secretary, Bert Van Tuyle, for the sixth consecutive year.

Washington Plans a Run—Sanction for the four-leaf clover run of the Automobile Club of Washington, May 15-18, has been granted by the contest board of the A. A. A., and the work of securing entries is now under way. It is expected at least thirty cars will compete. The work of laying out the route has been assigned to the motor editors of the Washington newspapers and they are now engaged in the work. The tour will start and finish each day in Washington.

Passes Roads Bill—Good roads advocates won their first victory in the Wisconsin legislature last week, when the senate passed the Donald good roads act practically without opposition. The Donald bill carries a yearly appropriation of $350,000 for good roads purposes, this sum to be distributed among the counties which make expenditures for highway improvements along lines laid down by a commission of experts. The assembly is expected to pass the bill, although some opposition is expected there.

JAPANESE DRIVING LICENSE

Motoring laws exist in far-off Japan just the same as they do in this country and in the city of Tokio it is demanded that drivers secure licenses from the municipality. The above illustration shows the official document as issued by the Tokio city officials to E. W. Frazer, the Ford dealer.

HUMILIATION OF THE HORSE

Motordom is moving in a solid phalanx against the horse. Each day removes the faithful beast further from his fields of work and the motor car steps in to do it better, quicker and cheaper. Sentiment has given way to utility and economy.

The embarrassment of the horse has gone as far as tonsorial treatment by a motor car. This occurred in Portland, Ore., where a hustling population does things with despatch; where a labor-saving device is welcomed with open arms. A veterinarian has hung out a shingle, "Horse's haircut a la motor," and a thriving business is done, a Brush runabout furnishing the motive power for this bit of tonsorial work.

Cleveland Club Activity—Activity is the order of the day at the Cleveland Automobile Club. From present indications July 4 will be the day on which the decorated car parade will be held. The first run of the season will be held early in June.

Housewarming Date Set—Although members of the Milwaukee Automobile Club are already enjoying the privileges of the new $20,000 clubhouse at Blue Mound and Cottrill avenues, west of Milwaukee, the formal house warming will not take place until May 1. The steward is on duty and while all of the furniture is not placed, members are showing their appreciation of the club's efforts by frequent visits.

Success of Des Moines Show—The success from a business standpoint of the Des Moines show, which was held at the Coliseum March 7 to 11, is shown in the business done by Des Moines dealers during the past week. According to reports from the dealers there were more than 300 cars sold out of Des Moines in the week. One dealer put out sixty-nine cars during the week, it is reported.

Current Motor Car Patents

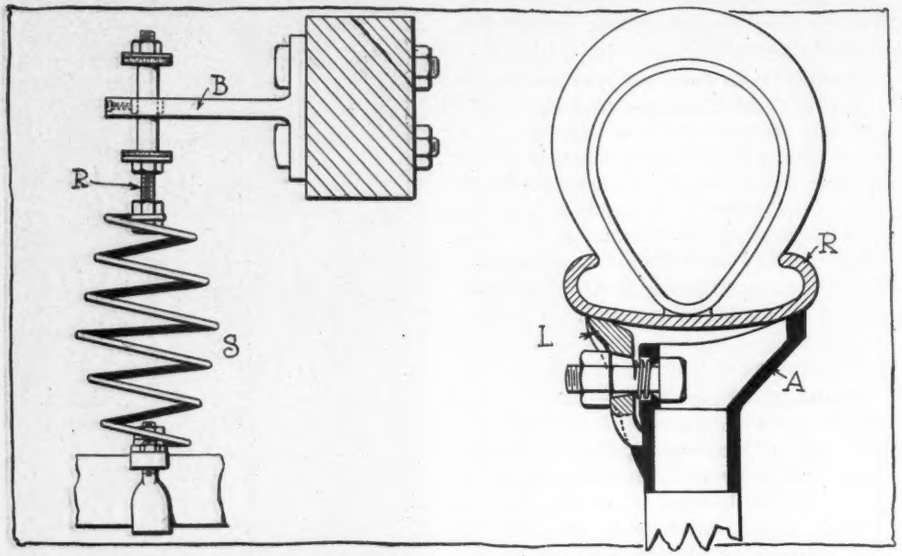


FIG. 1—SPRING SHOCK ABSORBER

FIG. 2—GIBSON'S RIM PATENT

PIVOTED Headlight—No. 986,966, dated March 14; to T. B. Donahoo, Oakland, Calif. This patent refers to a headlight device for operating in conjunction with the front wheels. The lamp yoke is carried on a bracket secured to the frame and on the lower end of the hub of the yoke stem is a short offset, which connects by a flat strip with a vertical pin on the steering hub of the car. Between the two headlights is a connecting link so that they both turn at the same moment, and at the same degree.

Friction Shock Absorber—No. 986,622, dated March 14; to E. F. Ciglia, and L. F. Pelletier, New York. In this shock absorber, Fig. 3, the arms A and A1 have on their adjacent faces three or more intermeshing projections, the sides of which are inclined at angles of less than 30 degrees, with the planes in which they swing. The patent claim includes means for holding these cam faces in operative relation to each other, so as to permit of three swings with respect to each other in the neutral zone, and a progressional increase of friction as this zone is departed from. The two arms A and A1 are pressed against each other by springs.

Individual Clutch Gearset—No. 986,444, dated March 14; to C. Cotta, Rockford, Ill. In the change-speed gear, Fig. 4, the continuously rotating countershaft CS has a rigid clutch collar K with teeth on opposite sides, for engagement with a pair of gears G and G1 loosely mounted on the countershaft and capable of being moved endwise thereon. This gearset has a driven shaft S1, having a pair of gears G2 and G3 slidably mounted on it, and in constant mesh with the gears G and G1. The patent includes means to slide these pairs of meshing gears to or from the clutch collar K, for the purpose of either disengaging both, as illustrated, or for the engagement of one pair while the other is free. The driving shaft S is constantly in mesh with and driving the countershaft CS.

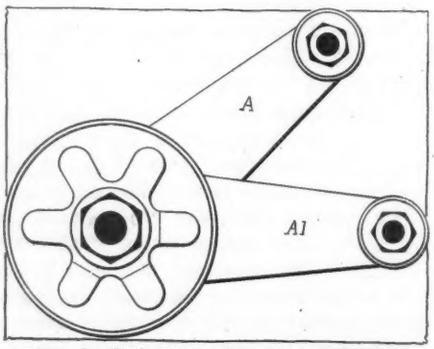


FIG. 3—FRICTION SHOCK ABSORBER

Spring Wheel—No. 986,563, dated March 14; to R. R. Hage, Hulbertstown, Ala. In this wheel are inner and outer concentric rims, with an annular spring box between them and rigidly secured to the outer one, and having radial partitions, friction blocks mounted in said spring box between these partitions, opposing coil springs compressed between the friction block and partitions, and these blocks having inwardly projecting stuffing boxes in which work plungers which are secured to the inner wheel member.

Spring Shock Absorber—No. 986,021, dated March 14; to J. N. Jackson, Parkersburg, W. Va. This shock absorber consists of a bracket B secured to the vehicle frame and a coil spring S secured to the axle. A rod R extends vertically from the upper end of the spring through the bracket B and means are provided for regulating and limiting the vertical movement of the rod through the bracket. On the rod are adjustable collars, both above and below the bracket B.

Demountable Rim—No. 986,452, dated March 14; to H. A. Gibson, New York. In this patent the rim R carrying a pneumatic tire is held in place by means of a fixed arm A on each spoke, and a movable level L held in place by a transverse bolt.

Pneumatic Tire Protector—No. 986,670, dated March 14; to T. F. Baldwin, New York. The protector referred to consists of a series of metallic sections S, each covering a quarter of the outer circumference of the tire and united by a tread strip T formed of metal.

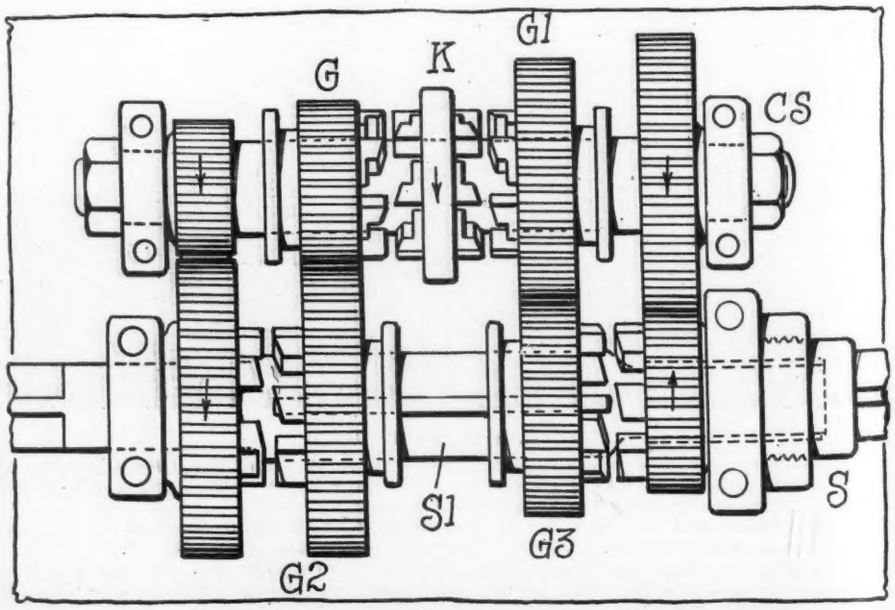


FIG. 4—COTTA INDIVIDUAL CLUTCH GEARSET

The Motor Car Repair Shop

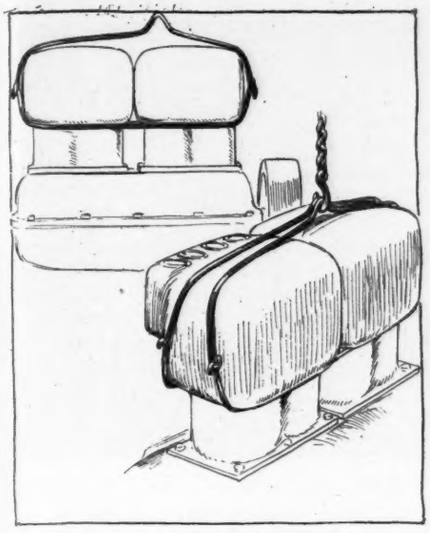


FIG. 1—SUITABLE MOTOR SLINGS

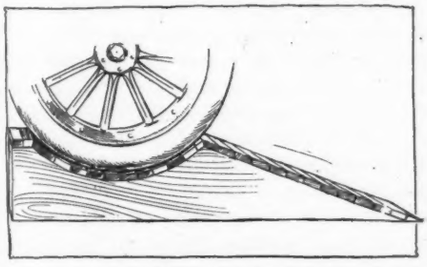


FIG. 2—SUBSTITUTE FOR REPAIR PIT

Transferring an Engine

MUCH damage has been done to motor car engines by careless and unskilled amateur and junior repairmen, while transferring them from the chassis to the block on which the motor is generally supported during an overhauling.

In attaching a rope sling it should be looped around the stoutest portions of the engine. On an engine having four legs or supporting arms, for instance, a loop of the rope should pass around each leg or arm. On a three-point suspension motor a loop should hold each of the two legs, and the third loop should pass around the crankshaft. One should see that the rope is so arranged that it cannot crush any of the motor parts when drawn taut; that the rope passes over no sharp edges that are liable to cut it and permit the motor to fall; and that the loop that is secured to the hook of the hoisting device be properly placed in order that the motor may be kept as near a horizontal position as possible when being removed. Considerable care should be exercised in raising the motor out of the chassis when a powerful block and tackle is used, for unless everything is properly disconnected some feature or parts which were overlooked may be badly bent or broken before the neglect is discovered. A common error is that of neglecting to disconnect the carbureter feed pipe, but worse things of this nature can happen.

In order to eliminate the dangers of the rope sling, and at the same time facilitate the removal of motors, the Peerless branch of Boston has in its repair department a pair of steel slings such as are illustrated in Fig. 1. These not only are very much more quickly applied to a motor than a rope sling, but the loop which connects to the hook of the hoist is always at the right place, and there is no possibility of crushing any of the frailer motor parts. The slings are made of solid rolled steel about ¾ inch thick and each consists of two parts with hooked ends, having the hooks disposed at right angles to each other so that the two parts may be readily engaged or disengaged.

Cast Iron Stands

In many of the more up-to-date repair shops cast iron standards, such as is shown in Fig. 3, are being used in place of the wooden ones, for supporting axles while the road wheels are removed. The advantages of cast iron standards are that they are practically indestructible; if properly designed they are more substantial.

Useful Wooden Horse

Notwithstanding the usefulness of the wooden horse in the motor car repair shop, many shops either are without them entirely or have not enough of them. It is not an uncommon sight in the motor car repair shop to see a chassis with its rear axle removed and its rear end mounted on an assortment of insecure wooden blocks, which have been known to give way most unexpectedly. And there are cases on record where severe bodily injury has happened to a workman employed under chassis so supported, to say nothing of the damage to motor car mechanisms. Wooden horses of substantial construction may be had at such a reasonable cost that a repair shop should not be without them, and their advantages are that they eliminate danger to workmen and cars, and greatly facilitate operations. In Fig. 4 a useful design of wooden horse is shown which is in constant use in an eastern repair shop. It differs from the ordinary type in that it has a shelf midway of its height which forms a handy receptacle for tools, etc.

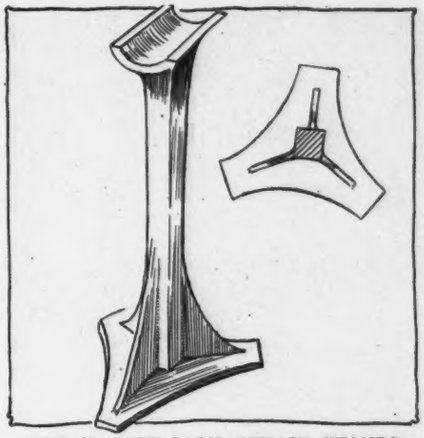


FIG. 3—CAST IRON REPAIR STANDS

Where Pits Are Not

Rather an ingenious but extremely simple and useful form of blocks is shown in Fig. 2. These blocks, which are made in pairs, one for each of the two front or rear wheels, are designed to facilitate operations under a motor car in shops where there are not any pits. For example, if the lower portion of a motor crankcase had to come down, the front wheels of the car would be run up onto the blocks, as indicated in the illustration, and the front end of the car raised sufficiently to give the workmen convenient access to the under side of the motor. The block is simple and comparatively light in construction, its side and end pieces being made from 2-inch boards and the top pieces of 1½ or 1 by 2-inch stock.

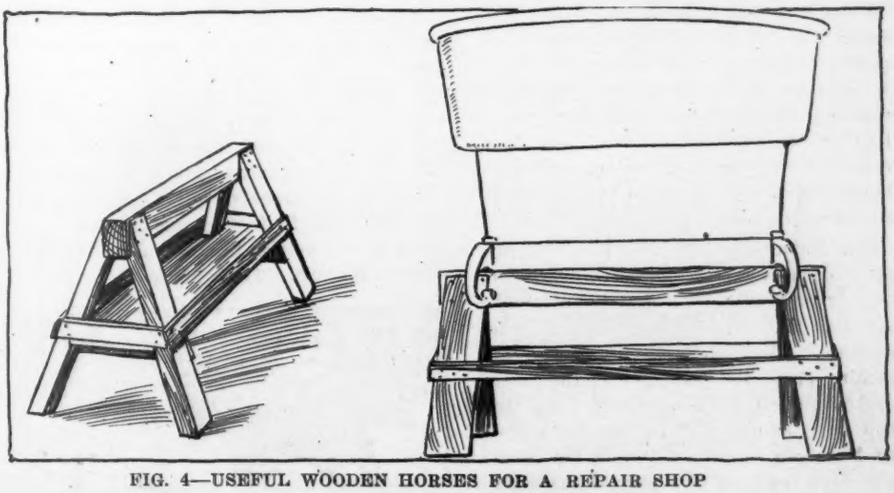
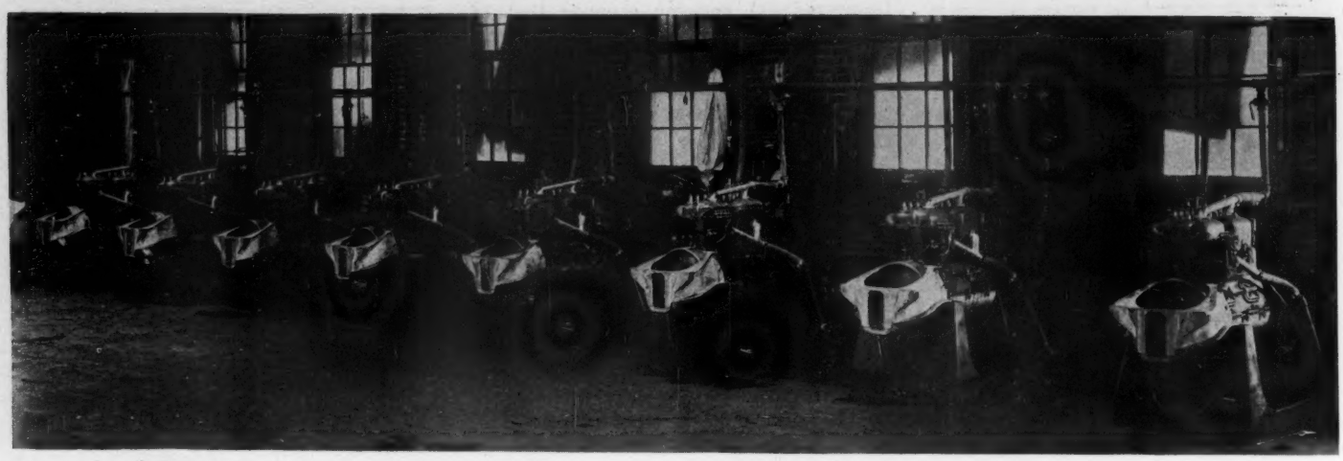


FIG. 4—USEFUL WOODEN HORSES FOR A REPAIR SHOP

Among the Makers and Dealers



ROOM IN WHICH THE MOLINE AUTOMOBILE CO. TESTS ITS ENGINES

McCLEISH Is Chosen—Earl McCleish has become the assistant advertising maneger of the Regal Motor Car Co. Roy J. Buell is the advertising manager.

Changes at Thomas Plant—K. B. McDonald, factory manager of the E. E. Thomas Motor Car Co., and R. J. McKenzie, purchasing agent for the same concern, have severed their connection with the new Buffalo organization.

Michigan Move—The Eclipse Motor Works, for many years located in Mancelona, Mich., will move its plant to Traverse City, Mich. The stock of Isaac Rodenbaugh has been purchased by W. F. Calkins, president of the Traverse City Iron Works, and the motor works will be merged with the latter.

Lecturers in Buffalo — The E-M-F-Flanders lecture tour reached Buffalo Friday and the agents of the E-M-F Buffalo Co. listened to the lecture, which was illustrated by moving pictures showing the manufacturing of E-M-F and Flanders cars. Later came the banquet and a hill-climbing demonstration by the Flanders 20.

Regal Has New York Branch—The Regal Motor Car Co. of Detroit announces the opening of its New York agency, the Regal Motor Sales Co. of New York, with salesrooms and offices at 1670 Broadway. L. A. Hopkins is president of the New York company. William M. Botto, Julius G. Hocke and George T. Gould are associated with Mr. Hopkins.

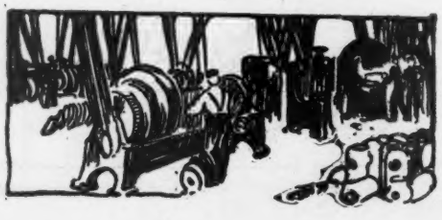
Will Rebuild Plant—The plant of the Ideal Motor Car Co., of Lansing, Mich., recently destroyed by fire, will be rebuilt, according to E. F. Cooley, president of the company. Temporary locations for the machine shop, for testing and for offices have been secured. Temporarily a machine shop will be operated in the factory of the Michigan Screw Co., while the offices have been removed to a part of the offices of the Clark Power Wagon Co., in whose plant testing and machine manufacture will be carried on.

Moline's Testing Plant—An accompanying illustration shows a corner of the testing room of the Moline Automobile Co. Engines are tested out on substantial cast iron stands, set on concrete foundations, with all pipe connection made ready for exhaust, gasoline and water.

With Briggs & Stratton—William S. Pearne will act as general sales and advertising manager for the Briggs & Stratton Co. of Milwaukee. Mr. Pearne has for the last 10 years had charge of the advertising and sales for Julius Andrae & Sons Co., one of the largest electrical jobbing houses in the northwest.

Buy Breach Block Plug—The Standard company, of Torrington, Conn., has disposed of all rights and title to the Breach Block plug to A. R. Mosler & Co., New York, who also make the Spit Fire. The new owners will control the manufacture and sale of the plug after the Standard company fills its contracts.

Branch at Factory—The oldest establishment on Chicago's row moved Saturday when the Woods electric branch opened in the new retail quarters erected at the north end of the factory at Cottage Grove avenue, Twenty-fifth street and Calumet avenue, a triangular corner. The new salesroom has light on all sides, is most convenient to the factory and is accessible to users of electrics because of being only two blocks away from Michigan avenue. The old location of the branch was at 1408 Michigan avenue.



Government Ruling—The treasury department at Washington has ruled that on the exportation of motor car top rubberized fabrics manufactured with the use of mohair cloth and mohair and cotton cloth, for and on account of H. Scherer & Co., of Detroit, by the Archer Rubber Co., of Milford, Mass., a drawback shall be allowed equal in amount to the duty paid on the imported cloth used, less the legal deduction of 1 per cent.

Will Increase Capacity—The Booth Demountable Rim Co. is making arrangements to increase its factory capacity. It has made contracts with a local firm for additional hydraulic presses. Unless the equipment is installed shortly the factory will be obliged to run nights. A contract has been signed with the Consolidated Motor Car Co. for 1,800 sets of rims. A new department, known as the city department, is to be added and will be in charge of L. E. Manley.

Ford's March Shipment—The total number of model T cars shipped by the Ford Motor Co. during the month just closed amounts to 4,574, it is announced. This number is not only a record-breaker for the Ford company, but it is claimed is the largest number of cars ever shipped by any concern in the country in one month. Previous to this record-breaking month of March the largest number of cars shipped by Ford during the period of any one month was 3,731, this number being sent out during its busiest month of 1910. One thousand one hundred and twenty-two freight cars were loaded with Ford cars and shipped during the month of March. The model T's were shipped three in a car as a rule, but in some cases, such as export business and large shipments to the Ford branches, the cars were knocked down

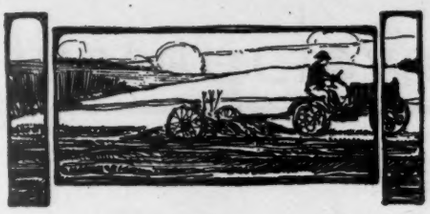
and packed six and eight in a car before shipping. Out of the total number of March shipments, nearly 450 model T's were sent to foreign countries.

Selling Conover Bumper—The Lovell-McConnell Mfg. Co., of Newark, N. J., has taken over the entire sales of the Conover bumper, which name is to be changed to the Conover safeguard. The New Jersey Tube Co., of Newark, N. J., will still continue the manufacture of this article.

Entertains Studebaker Agents—A. R. Davis, manager of the Ohio branch of the Studebaker Automobile Co., entertained in Cleveland Saturday the agents connected with the local Studebaker branch. Walter E. Flanders, of Detroit, and George Keller, sales manager of the Studebaker company, were present and gave addresses. Many of the agents drove to Cleveland for the event despite the forbidding condition of the roads.

New Lozier Deal—A change has been made in the selling arrangement of the Lozier cars in Brooklyn. Heretofore, Brooklyn business has been conducted through the Manhattan branch at Fifty-sixth street and Broadway, but in the future the Dunham company, 1521-23 Bedford avenue, will act as the selling agent for the Lozier cars in Brooklyn business. Outside of Brooklyn and in all other Long Island territory it will have exclusive selling rights for the Lozier line of cars.

Chalmers' Quaker Opening—The Chalmers-Hipple Motor Co. of Philadelphia, heretofore located at the southwest corner of Broad and Vine streets, has removed to permanent headquarters at 338-340 North Broad street, the formal opening of which took place last Saturday. The new home of the Chalmers car is one of the handsomest and most complete on North Broad street. In the near future this company plans the enlargement of its plant at Seventeenth and Vine streets, where its machine shop is located, and the establishment of a day and night service department. The Fanning Motor Co. distributor of the Bergdoll and the Thomas, is now installed in the quarters vacated by



the Chalmers-Hipple company, and the Longstreth Motor Car Co., one of the recent fire victims, handling the Alco and Pullman cars, is temporarily occupying the former quarters of the Fanning company at the southwest corner of Broad and Race streets.

Sprinklers Save Factory—Fire in the trimming shop of the motor car department of the Michigan Buggy Co., at Kalamazoo, Mich., caused damage amounting to $5,000. The efficacy of the sprinkling system was responsible for the fact that the damage was no greater. The origin of the fire was a mystery.

Mitchell Will Make Bodies—The Mitchell-Lewis Motor Co., of Racine, Wis., is about ready to begin the manufacture of its own metal bodies. A large space has been arranged for this department in the Washington avenue plant. Much new equipment in the line of machine tools is being installed in the Junction plant.

Rainier a Garford Agent—Announcement is made by the Garford company of the appointment of J. T. Rainier as its agent for the New York territory. Mr. Rainier was for years president of the Rainier Motor Car Co. Since its absorption by the General Motors Co. he has acted as its representative in New York city.

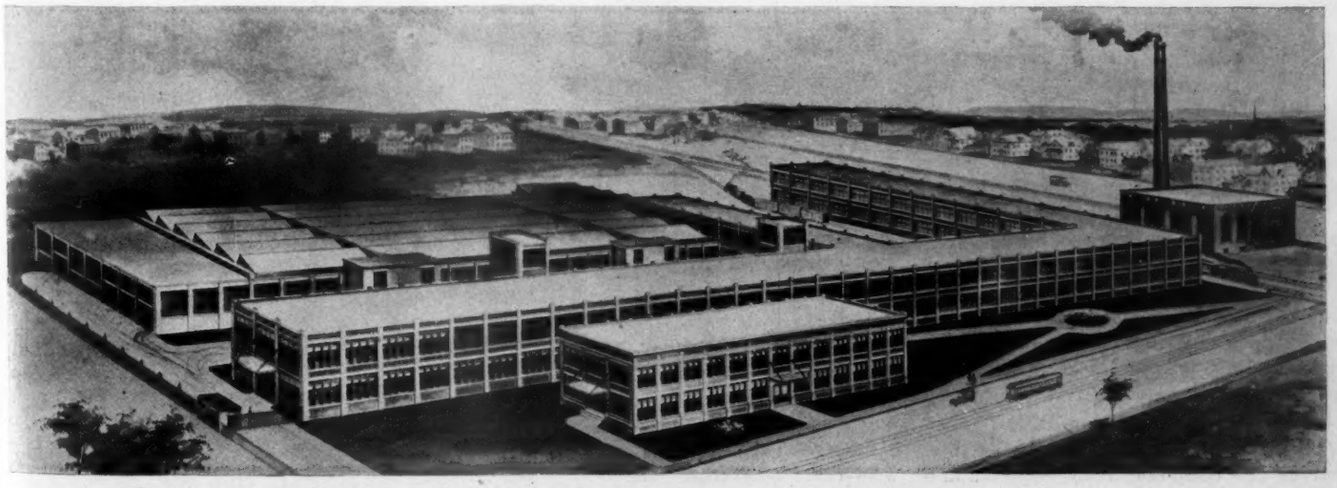
Dr. Bosch Touring America—Robert Bosch, of Stuttgart, Germany, designer and inventor of the Bosch products, has arrived in the United States. Dr. Bosch with Otto Heins, president of the Bosch Magneto Co., of New York, is making an extended tour of the United States with the object of visiting some of the larger American industries. While in this country it is also his intention to visit the Bosch Magneto Co.'s New York and Springfield factories, as well as its many branch houses.

Saurer Truck Deal—It has been decided to build Saurer trucks in the country instead of importing them. A plant has been secured at Plainfield, N. J., and the Saurer Motor Truck Co. has been organized in New Jersey, with a capitalization of $1,600,000 to take over the American interests of the Swiss truck. C. Phillip Coleman, formerly secretary and treasurer of the Singer Sewing Machine Co., is president.

Mission for Weissenberger—Max A. Weissenberger, of Cleveland, Ohio, has been sent to New York city to become district manager of the New York territory for the Regal Motor Car Co. Mr. Weissenburger will cover the Hudson river valley, the Lake Champlain district, a section of Connecticut and the northern half of New Jersey. His headquarters will be at the Regal wholesale warehouse in Fifty-second street, near Broadway.

Buys a Pump Business—The Brown Co., of Syracuse, N. Y., has taken over the entire pump department of the Weld Mfg. Co., of North Chatham, Mass., and will in future market the Impulse pump under its own name. This pump is designed to be placed in the spark plug, the compression of the engine working the two pistons by means of which pure air is forced into the tires. The Brown Co. also has added a line of spring shackle grease and oil bolts.

Another Klaxon Suit—The Lovell-McConnell Mfg. Co., maker of the Klaxon warning signal, has sued the Weaver-Ebling Automobile Co. of New York city for a permanent injunction, alleging the latter sold Klaxon warning signals at less than list prices at retail. This has been granted by Judge Cox for the United States circuit court for the southern district of New York. This injunction permanently prohibits the Weaver-Ebling company from selling, quoting, cataloging or having in its possession any Klaxon warning signals.



NEW PLANT AT DETROIT INTO WHICH THE LOZIER COMPANY HAS JUST MOVED

Development Briefs

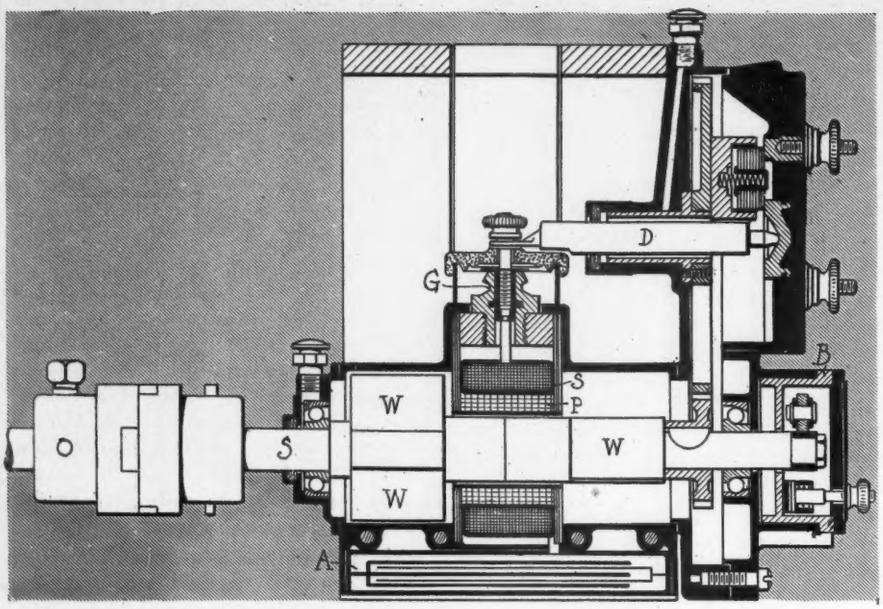


FIG. 1—SECTION OF THE K-W HIGH-TENSION MAGNETO

THE model J, K-W magneto, for this season is a strictly high-tension type in which primary and secondary windings are used on the armature but which windings are stationary, whereas in nearly all of the high-tension magnetos the windings are on the armature and rotate at crankshaft speed. On this K-W model what is known as the rotor type of armature is used and is illustrated in Fig. 1. On each end of the armature shaft S are two metal winged pieces W known as rotors. The two pieces at the left end in the illustration are placed diametrically opposite, but only one of the pieces W can be seen at the right end of the shaft because they are arranged at right angles to the pieces at the left. Between these wings or rotors are the two stationary windings, P the primary being relatively few turns of coarse wire, and S, the secondary, being many turns of very fine wire. The primary winding, as in the ordinary type of armature, connects with the breaker box mechanism carried within the box B on the end of the rotor shaft. In this box the primary circuit is broken twice for each revolution of the armature or rotor, thus inducing in the secondary winding S a high-tension circuit. The secondary circuit of wiring is the same as in the average magneto. It is led from the winding S through a spark gap G and through the distributer shaft D to the distributer brush, which gives the current to the four wires leading to this spark plug. The condenser A is located in the base of the magneto.

The details of the circuit breaker, as well as the complete wiring system, are shown in Fig. 4, in which the double cam C on the end of the rotor shaft is shown. Twice at each revolution it bears against a roller R carried on the lever L, this lever being pivoted at the point F and having a spring S1, tending to hold the two platinum points P together. An ad-

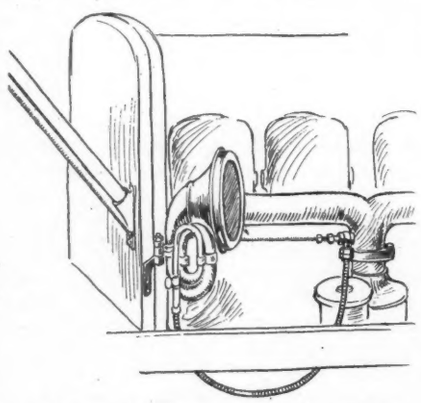


FIG. 2—ASPERO INDUCTION HORN

justing screw N is provided whereby the proper relationship of the two platino-iridium can be regulated. When the cam C is just beginning to separate the points P the spark takes place in the spark plug, and the carbon brush B of the distributer is in contact with the sector S, through which the current passes to the terminal 1 and thence to the spark plug.

The physical construction of this K-W magneto has been looked after carefully. The magneto is made with an extreme length of 8¾ inches and a base width of 3¼ inches, the base length measuring but 4 inches. This makes it interchangeable with other magnetos. The rotor shaft is carried on two races of ball bearings; magnets used are the same as the company has used for the last 5 years; and the best material enters into the construction of the magneto at all points. K-W Ignition Co., Cleveland, O.

Mogul Die-Cast Bushings

The Mogul die-casting bushings are made of Mogul babbitt, with the entire bushing studded with small circular blocks of graphite. The blocks are placed in the regular bushing under pressure. The graphite acts as a lubricant and is said to only wear down as the bushing does. The Muzzy-Lyon Co., Ltd., Detroit, Mich.

Aspero Induction Horn

The induction horn is one of the latest rivals of the compression bulb type and the electric types. The induction takes its name from the principal of operation, namely, that the suction of the motor is utilized to draw air in through the horn, this air current sets up a reed vibration the same as in the ordinary bulb horn. Fig. 2 illustrates how the intake pipe to the cylinders is tapped above the carbureter, with a flexible air pipe leading to the horn. Where this air pipe taps the intake manifold is a valve controlled by flexible wire from the steering wheel. Opening the valve allows of air being pulled through the horn by the motor. The horn is as easy to operate as an electric one.—Brown Bros., Ltd., London, Eng.

A. S. B. Tire Treads

The A. S. B. tire tread is a leather one entirely covering the tire and having the hair side of the leather inside or against the tire. Series of rivets pass through the tread, giving it an anti-skid value. The tread is held in place by a series of short springs extending circumferentially around the tire at each side. These springs engage with special hooks which

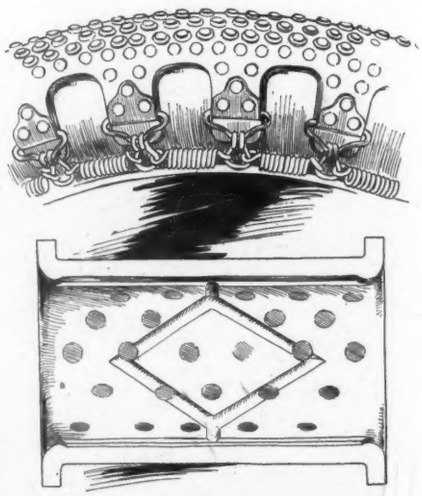


FIG. 3
A. S. B. TIRE TREADS
MOGUL DIE-CAST BUSHING

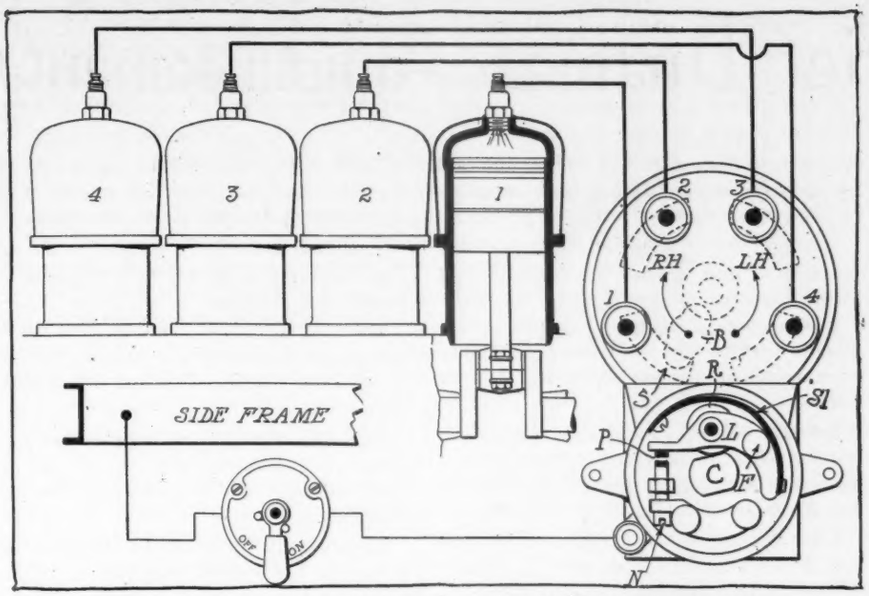


FIG. 4—WIRING DIAGRAM OF K. W. HIGH-TENSION MAGNETO

attach to the tongues on the leather tread parts, the leather extending down so as to protect the tire from wear by the hooks. The springs make the tread self-adjusting. Queen Mfg. Co., Webster City, Iowa.

Motor Car Literature

"The Tire Perfect" is the title of a booklet from the Republic Rubber Co., containing short talks on tires. This same company is also mailing a booklet devoted exclusively to the subject of tires for trucks.

The Hess-Bright Mfg. Co., Philadelphia, Pa., has issued a de luxe catalog which presents interesting data on its line of ball bearings. The excellent half-tone illustrations, the high-grade stock used, and the double cover give the catalog in its entirety a rich and pleasing effect.

"The Norwalk 35" is the title of a conventional catalog from the Norwalk Motor Car Co., Norwalk, O., describing in the usual catalog manner its 1911 line.

Striking in its bright blue cover and white border, with the words "National 40" embossed in white, is the 1911 catalog of the National Motor Vehicle Co., Indianapolis, Ind. On the last two pages is a list of the National victories on speedway, road and hill. The usual catalog specification is included.

From the Booth Demountable Rim Co., Cleveland, O., is its latest catalog which describes and illustrates the demountable rim marketed by this company.

Dressed in a modest brown cover, the catalog of the Federal Motor Truck Co., Detroit, Mich., exploits in a conventional manner its 1-ton trucks.

The 1911 catalog of the Banker Windshield Co., Pittsburg, Pa., features its complete line of windshields, including its tailor-made, model de luxe, and zig-zag types.

The Inter-State Bull-Dog cars for the 1911 season are conveniently illustrated and described in a thirty-two-paged catalog. Pictures of factory methods and factory machinery are interspersed through the description. The catalog is garbed in an embossed gray cover, the head of the bull-dog, the company's trade-mark, appearing in the center of the front cover page.

A catalog along conventional lines is that of the Ohio Motor Car Co., Cincinnati, O., detailing its line of Ohio cars for the 1911 season. In addition to the many mechanical illustrations are pictures of the Ohio as seen in some of the big tours and road races of the past season. The usual catalog specifications are included.

The Glide catalog for 1911, issued by the Bartholomew Co., Peoria, Ill., is a conventional affair, featuring its Special 45 in five and seven-passenger, roadster,

An interesting catalog on the subject of roller bearings is being issued by the Hyatt Roller Bearing Co., Detroit, Mich., illustrating its line of standard and high-duty types. Included in this 14 by 11¼ sized catalog is a description of each type of bearing and a list of their regular sizes and capacities. The illustrations are line drawings accompanied by a mechanical description of each.

The J. S. Bretz Co. has in circulation a voluminous catalog illustrating and giving sizes of every type of F. and S. ball bearing. The first portion of the catalog is illustrated with two dozen photographs of the factory in which these bearings are manufactured.

In the catalog on Cino cars each page contains a large illustration of one of the different models, including commercial types. There are the usual illustrations of car parts and specifications.

The Empire Tire Co. is circulating a set of folders illustrating its new demountable rim. The cover illustrates the rear wheel of the car with a tire on, and the driver in the act of removing the tire. When the cover is turned back the rim is shown with the tire removed. The other folders illustrate the Empire tire preserver and the Empire checkered tread.

The Colburn Automobile Co. has an interesting set of a dozen illustrated cards showing its car in the mountain vicinities of Denver. On the reverse of each card a description of some car part is given.

The Automobile Club of San Antonio has brought a large sized road map in which all of the entrances to the city are marked in heavy lines. The map covers an area of 40 miles on each side of the city.

The Buda Co. has a catalog illustrating the different types of engines and gear-sets which it manufactures. Complete specifications are given.

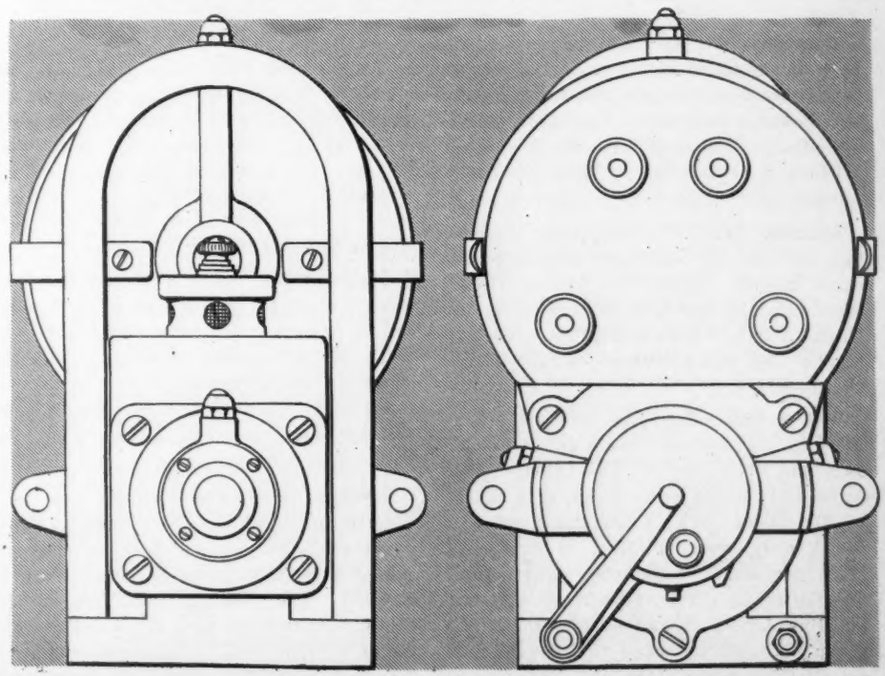


FIG. 5—BOTH ENDS OF K. W. HIGH-TENSION MAGNETO

Brief Business Announcements

SPOKANE, WASH.—J. M. Kennedy is the new manager of the Standard Motor Car Co.

Spokane, Wash.—Van B. DeLashmuth has taken the agency for the Cartercar for Spokane.

Monroe, Wis.—Knobel Brothers have opened a repair shop on Jackson street and will cater exclusively to the motor car trade.

Milwaukee, Wis.—The Fisk Rubber Co.'s new Milwaukee factory branch has been temporarily located at 448 Milwaukee street.

Long Branch, N. J.—The Columbia Garage and Machine Works on Brighton avenue has taken possession of the Elberon garage.

Grand Rapids, Mich.—George A. Stekeetee has established an agency for the Abbott-Detroit line in the Allen Dorothy garage on North Ionia street.

Seattle, Wash.—The Consolidated Auto Co. has secured the Hupmobile agency for eastern Washington, adding it to the White line for the 1911 campaign.

Montreal—The National Motor Co. of Canada, Limited, has been appointed distributor for Montreal and vicinity for the Canadian Motors, Limited, of Galt, Ont., manufacturer of the Canada tourist and roadster.

Cleveland, O.—The Burgess-Wiseman Mfg. Co. has been incorporated with a capital of $10,000 to manufacture accessories. The incorporators are Roy C. Burgess, E. H. Wiseman, E. L. Burgess, F. W. Wiseman, C. A. Baxter and H. E. Hammond.

Columbus, O.—The Automotor Co. has been incorporated with a capital of $30,000 to manufacture and sell motor cars, motor trucks and accessories. The incorporators are A. F. Dickerson, F. W. Dickerson, William F. O'Gara, H. S. Bobo and Frank Lowenan.

Madison, Wis.—The Hokanson Automobile Co., of Madison, has established another branch, located at Mount Horeb, Wis. The garage will be known as the National-Buick Automobile Co. and will handle the Buick, White, Oakland and Oldsmobile.

Beaver Falls, Pa.—The Standard Gauge Steel Co. has opened branch offices in Chicago and Philadelphia. The Chicago office is 540 Old Colony building and is in charge of Mr. Gillen. The Philadelphia office is 516 Pennsylvania building, in charge of W. A. Mellon. The company manufactures finished crank shafts, connecting rods, finished machine keys and machine rack, with a complete line of round cold drawn steel for shafting, screw stock, etc., added to its line of cold drawn steel in flat, square and hexagon shapes that it has been manufacturing heretofore.

Reading, Pa.—The G. M. Britton Co. is building a new garage at Franklin and Carpenter streets.

Portland, Ore.—Arthur E. Laffer, of Salem, Ore., formerly of Manning, Ia., has been appointed Oregon distributor for the Paterson.

Seattle, Wash.—J. G. Tennant, for the past 3 months manager of the Peerless agency in Seattle, has been transferred to San Francisco with the H. O. Harrison Co.

Long Branch, N. J.—Herbert W. Cooper and A. M. Tomasky have formed a partnership for the purpose of dealing in motor cars. Their garage is at 199 Morris avenue.

Cleveland, O.—The Otto Konigslow Mfg. Co. has been incorporated with a capital of $50,000 to manufacture accessories in addition to other products. The incorporators are Otto Konigslow, Jr., A. A. Bemis, Frank W. Bowler, Otto Konigslow, Sr., and M. E. Konigslow.

Pittsburg, Pa.—The Hercules Tire and Rubber Co., of Pittsburg, Pa., has filed articles of incorporation at Dover, Del., to manufacture tires etc. The capital stock is $100,000 and the incorporators are E. G. Bossinger, Joseph T. Murray, F. L. Cleveland, all of Pittsburg, Pa.

Iowa City, Ia.—The entire plant of the O. S. Kelly Western Mfg. Co., costing $150,000, was sold here to Paul A. Korab, cashier of the Iowa City State Bank, for $13,500. A stock company of Iowa City people may be organized to continue the manufacture of gasoline engines, etc.

Philadelphia, Pa.—Plans have been completed for a large five-story salesroom and garage building to be erected at the southeast corner of Thirty-third and Arch streets. The names of the owners are not disclosed. The building will be of brick and concrete, 200 by 80 feet. The estimated cost is $150,000.

Duluth, Minn.—Bray & Nystrom are preparing plans for a new garage to be built in the central part of this city. It will be built of brick and steel and will be equipped for the storage of cars and repair work. The building will be 50 by 92 feet on the first floor, with a floor of smaller dimensions above.

Portage, Wis.—The Portage Boat and Engine Co., organized 5 years ago to manufacture motors and marine engines, has changed to a corporation, capitalized at $15,000. The company will now handle motor cars and has been appointed district agent for the Ford. The Schulze building adjoining its plant has been leased and is now being remodeled into a garage. Herman Zastrow, Julius Koepp and W. H. Nehls are the principal stockholders.

Portland, Ore.—H. O. Hickox, now handling the Warren-Detroit cars, will add the National to his line.

Indianapolis, Ind.—The Cole is to be handled in the province of Quebec, Canada, by P. Garbois & Co., 316 City Hall avenue, Montreal.

St. Louis, Mo.—M. H. Parsons has been appointed assistant manager of the St. Louis branch of the Goodyear Tire and Rubber Co.

Indianapolis, Ind.—A. L. Sheridan has taken the agency for the Colby in Indianapolis and has taken quarters with the Capitol Auto Co., 510 North Capitol avenue.

Baltimore, Md.—The Standard Motor Car Co., agent for the Cadillac, has appointed S. W. Kent Miller as salesman for the Cadillac in the western counties of the state.

St. Louis, Mo.—The Continental Motor Equipment Co., 5887-89 Delmar boulevard, has taken over the accessory business of the Pope-Hartford Motor Car Co. John F. Shuford will be manager of the company.

Marinette, Wis.—The Twin City Tire Co., which is building a large garage and tire depot at Marinette, is contemplating the establishment of a motor bus service between Marinette, Menominee, Mich., and Peshtigo, Wis.

Boston, Mass.—The truck department of the Whitten-Gilmore company in Boston is now in charge of A. B. Henley, formerly manager of the Franklin branch and later with the Frayer-Miller company. The firm has the Dayton and Adams trucks.

Boston, Mass.—Chase Langmaid, for some years manager of the Hartford Rubber Co.'s branch in Boston, is to go with the Autocar company, and Edward Kidder, who looked after the Continental tire interests, is to be made manager of the United States tire branch in this city.

Portland, Ore.—Headquarters for the Overland and Kissel have been opened in Portland the past week by the J. W. Leavitt Co. The new building at 529 Washington street covers a lot 50 by 100 feet and is a two-story brick and steel structure, similar to the one recently completed for this company in Seattle.

Pittsburg, Pa.—Lee F. Hoffman, manager of the Hoffman Automobile and Garage Co., of Meyersdale, Pa., and Bedford, Pa., is arranging to open a branch garage at Oakland, Md., and another at Frostburg, Md., to be operated under the name of the Hoffman & Naylor Garage Co. and the Hoffman Garage Co., respectively. A.

D. Naylor, of Oakland, will be in that place and S. B. Johnson, of Frostburg, will be a member of the firm there.

Tremont, Ill.—Pratt Brothers have taken floor space and will conduct an agency for the Cutting cars in Tremont.

New York—The Cross & Brown Co. has leased for the G & J Tire Co. the store 1924 Broadway to the Swinehart Tire and Rubber Co.

Cleveland, O.—Ralph Kinney has joined the Western Reserve Motor Car Co.'s sales force and will handle the Garford and Pierce-Arrow lines.

Edmeston, N. Y.—The garage of C. W. Hopkins & Son is nearly completed. It is located in the building formerly occupied by Burlison's hardware store.

Boston, Mass.—The Coburn Auto Sales Co. has moved to Boylston street, taking the store formerly used by the Continental, in which it will display Enger and Johnson cars.

Stoughton, Wis.—M. O. Flom, implement dealer, and Alderman Thomas Oscar have formed a partnership under the name of Oscar & Flom to handle motor cars and supplies.

St. Louis, Mo.—The Near Air Tire Co. of St. Louis has been incorporated with a capital stock of $50,000 to manufacture near air and to sell machinery for putting it into tires.

Philadelphia, Pa.—The Colonial Motor Co., of 330 North Broad street, has undergone a change and now consists of James W. Slemons as manager, with R. N. Abbott as assistant manager. Mr. Slemons was a member of the old concern, but will now handle the Regal and Rainier cars alone.

Milwaukee, Wis.—The name of the Rambler Garage Co., of Milwaukee, factory branch of the Thomas B. Jeffery Co., Kenosha, Wis., has been changed to conform with the style of the factory name. Arthur W. Shattuck is manager of the branch, which is located at 455-457-459 Broadway.

St. Louis, Mo.—The St. Louis Alco Co. has been organized to handle the Alco car, the Alco truck and the Pullman line, formerly handled by the Van Automobile Co. In the new company are J. Ford and A. R. Van Antwerp. The new company will have salesrooms at 4700 Washington boulevard.

Milwaukee, Wis.—The Wadhams Oil Co. of Milwaukee has established another branch supply house at Jefferson, Wis., making the fifteenth branch in Wisconsin. Frank Kemmeter, for many years agent for the Standard Oil Co. at Jefferson, has been appointed manager of the new branch.

Madison, Wis.—The Brown Auto Co. opened for business on April 1. The firm occupies the former Myron Brown livery stables, which have been completely remodeled. The dimensions of each of the two floors are 135 by 65 feet, giving the Brown company one of the largest garages in Wisconsin. The Chalmers and Hudson are distributed and negotiations are under way for representing a line of Milwaukee-built motor trucks.

Jersey City, N. J.—The T. J. Butler Co. has opened a branch for the distribution of the Haynes and Reo at Bergen and Fairview avenues.

Elyria, O.—A fire which visited the garage of the Elyria Auto Inn recently caused a damage of $6,000. Most of the cars in the garage at the time were saved.

Chicago—A selling branch of the Fal Motor Co. has been opened at 1220 Michigan avenue, the first time the car has been represented on the row. W. A. Stewart is in charge.

Los Angeles, Cal.—The Bricker Motor Car Co., southern California agent for the Croxton, has moved into larger quarters at 1118 South Olive street. The building is 75 by 165 feet.

Des Moines, Ia.—Roy L. Nye, formerly connected with the Campbell Auto Co. here, has taken the agency for the Great Western car in Des Moines and the surrounding territory.

Oklahoma City, Okla.—John L. Francis is erecting a three-story brick garage, 50 by 140, to be rented upon completion in July. The second and third stories will be used for hotel purposes.

Cleveland, O.—The Motor Tire and Repair Co. has been incorporated with an authorized capital of $10,000 to sell and repair tires and to handle a full line of accessories. The incorporators are E. C. Anderson, Arthur E. Eikhoff, G. W. Anderson, John G. Murphy and E. T. Strong.

Flint, Mich.—The Auto Body and Specialty Co., of this city, has been incorporated. Its capital stock is $15,000. Owing to the increased amount of space demanded last summer the company had a large factory erected, into which it moved lately, and plans are now being made to enlarge this structure. After the factory has been enlarged the concern will engage in manufacturing specialties.

Recent Incorporations

New York—Cutting-Larson Co., capital stock $150,000; to deal in motor cars and accessories; incorporators, J. T. Cutting, C. H. Larson and H. Aplington.

New York—Star Carbureter and Supply Co., capital stock $50,000; to manufacture carbureters and motor car supplies; incorporators, W. J. McCormick, H. H. Zabriskie and I. G. Ladd.

New York—U. S. Motor Truck Sales Co., capital stock $50,000; incorporators, F. B. Meader, F. M. Edwards and J. Collins.

New York—Whiting Auto Wheel Co., capital stock $50,000; to deal in motor car supplies; president and treasurer, S. Whiting.

New York—Peerless Tire Co., capital stock $100,000; incorporators, W. F. P. Lofland, W. I. N. Lofland and J. S. Collins, Jr.

New York—Wilmington Motor Vehicle Co., capital stock $30,000, incorporators, C. W. Bush, H. R. Isaacs and A. Finger.

New York—Rogers-Williams Auto Co., capital stock $50,000; to deal in motor cars; incorporators, H. E. Rogers and C. S. Williams.

Philadelphia—Hercules Tire and Rubber Co., capital stock $100,000; incorporators, E. G. Blossinger, Joseph T. Murray and F. L. Cleveland, all of Pittsburg.

Trenton, N. J.—State Street Garage Co., capital stock $2,000; to conduct a garage; incorporators, Theodore G. Kitchin, M. A. Kitchin and M. A. Green.

Omaha, Neb.—One of the largest garages in the city recently was completed for the Freeland Brothers Co., Nebraska agent for the Midland car. The building is four stories and basement, of steel and pressed brick construction. It is located at Twelfth and Farnam streets. It is 44 by 132 feet. The Maytag-Mason branch also occupies a part of the building.

Lafayette, Ind.—Walter Wray, who has been connected with a large concern in Des Moines, Iowa, has joined the Hoffman-Moore Auto Co., of Lafayette, Ind., distributor for the Maxwell in central Indiana. James Deardorf, a former employee of Maxwell-Briscoe company, of New Castle, Ind., also is connected with the Hoffman-Moore company.

San Francisco, Cal.—William J. Wagner has affiliated his interests with the Simplex Pacific Coast Agency, and will assist Manager J. N. Burge in forwarding the interests of the New York car. Wagner has for the past year been manager of the Wagner Motor Car Co., local distributor of the Palmer-Singer, but he has disposed of his interests in this company to his father and brother.

St. Louis, Mo.—The St. Louis Stearns Automobile Co. announces that it has taken the agency for the Broc electric.

St. Louis, Mo.—The Gray Motor Car Co., agents for the Kline car, has removed its salesrooms to 4627 Delmar avenue.

Montreal.—The Motor Import Co. of Canada, Limited, has been appointed selling agent in Montreal for Goodrich tires.

Freemont, O.—H. C. Stahl, of Bellevue, Ohio, will erect a two-story brick building, 50 by 150, to cost $10,000. The building will be used for a livery stable and garage.

Atlanta, Ga.—The Consolidated Tire Co. soon will begin business at 21 Houston street. The firm will be composed of W. W. Heindel and J. D. Gary. They will handle Kelly-Springfield tires.

Fond du Lac, Wis.—M. B. Helmer, president of the Helmer Milling Co., is erecting a large garage adjoining the milling plant. The building will have dimensions of 40 by 115 feet and will be two stories high.

Columbus, O.—A. I. Fishbaugh, who has been manager of the accessories department of the Early Motor Car Co., will engage in business for himself at 20 East Town street under the name of the Columbus Vulcanizing and Supply Co. Associated with him is H. W. Davis. The concern will handle tires and accessories.

San Francisco, Cal.—The Howard Automobile Co., distributor of the Oldsmobile and Buick on the Pacific coast, is now establishing a branch in Seattle, Wash. This company is still intent on extending and perfecting its organization, and is now operating active branches in San Francisco, Los Angeles, Portland and Seattle.

Legal Lights and Side Lights

AFFAIRS IN NEBRASKA

THE lower house of the Nebraska legislature for some time has had under consideration the McArdle motor bill, which provides that the registration fee shall be based on the horsepower of the machine, 20 cents for each horsepower. The money after being paid in annually, under this bill would be returned to the county in which the machine was owned, to be used for road improvement. The bill further provides that no person under 16 years of age can drive a motor car; the speed limit is raised to 25 miles an hour in the country; drivers are not allowed to pass a street car while passengers are getting on or off; the number of a machine must be placed on both the front and back, and illuminated at night, and a driver must reduce the speed of the car to 6 miles an hour at a crossing.

The senate recently placed on third reading three of the five road bills which were drawn up by the joint committee of the two houses. These bills if passed through the legislature would provide for a fund of state and county money of nearly $250,000 a year for road improvement, and would create a state highway commission with an engineer in general charge of the work on highways. In the house these bills met some opposition, and a fight was started, some of the representatives clinging to the old style of county control of the roads. Nebraska lacks any definite state organization for highway improvement, now. However, it seems probable that the bills will be worked through.

OHIO WANTS CONVICT LABOR

A bill to provide for the employment of the convicts imprisoned in the Ohio penitentiary in improving the highways of the state of Ohio has been introduced in the Ohio general assembly by Representative Woodworth, of Athens county. Representative Woodworth is an enthusiast on the subject of good roads and he thinks he has a plan to benefit the state at large and at the same time give employment to the hundreds of convicts which are now confined in the idle house in the penitentiary. The bill provides that the board of managers of the Ohio penitentiary shall purchase or lease land upon which stone can be taken to be crushed and made ready for use on the highways.

OHIO WANTS ROADS BILL

With a view of providing a gross revenue of $6,000,000 annually for the building of good roads in Ohio, which sum will construct 1,000 miles a year, or one-seventh of the estimated amount to complete a proper intercounty system of highways, Senator Hudson has introduced a bill in the Ohio general assembly providing a fund by a state levy of one-half of 1 mill on the grand duplicate.

This rate, on the new tax duplicate, is estimated to produce $3,000,000, and in order to secure its share of this money each county must raise a like amount independent of the state levy. The state auditor is made custodian of the fund and it is to be shared equally by each of the eighty-eight counties on the condition named above.

The bill specifically provides that this money is to be used in building roads that connect the intercounty system, which is intended to obviate the building of detached sections that begin nowhere and end nowhere. According to ex-Senator W. A. Alsdorf, of Licking county, this bill will only put Ohio in line with Pennsylvania and New York, each of which is spending $50,000,000 on a good road system.

CASE OF FATHER AND SON

Is a father liable for the negligent driving of his son to whom he has entrusted his motor car? According to the decision in the case of Daily vs. Maxwell, 133 S. W., Mo. 351, he is to a certain extent. Says the court:

"Next we shall consider the contention of the senior defendant that his demurrer to the evidence should have been sustained. He was not present at the injury and his liability, if it exists, must be founded on the consent he gave his son to use the car. The mere fact that his son negligently injured plaintiff of itself would not support a cause of action against him, since the rule is well settled in this state that a father is not responsible for injuries inflicted through the negligence or willful wrong of his minor child. It requires something more than the real relationship to hold the father liable for the child's torts.

"But no one can deny that a motor car in the hands of a careless and incompetent driver would be a dangerous machine to turn loose on busy streets and would constitute a menace to travelers. The owner of a car must exercise reasonable care in the selection of a chauffeur, and, failing in this, will be held liable for the consequences of his own negligence in sending out his car in charge very apt at learning how to run vehicles of an incompetent operator. Boys are of all sorts—more apt than men—and the evidence before us is all to the effect that Ernest was a bright boy and careful, too, for one of his years. But he was only a boy and the jury was entitled to say from the mere fact that he was only 16 years old that he lacked judgment, discretion and care to be expected of a mature person and which was essential to the careful and proper operation of a vehicle so powerful as a motor car. . . . We do not go to the length of holding that the statutory prohibition against giving a license to run a motor car to a person under 18 years of age makes the employment of a chauffeur under that age negligence as a matter of law, but we do say that it gives the jury the issue as one of fact of classifying the conduct of one who turns his car over to an operator who is under the statutory age with permission to run it over the streets of a populous city. We conclude the court was right in overruling the demurrer of William F. Maxwell on the ground that the evidence supports the charge that the owner of the machine negligently suffered it to be operated by an incompetent driver, and thereby converted it into a dangerous and menacing instrumentality."

TWO MICHIGAN MEASURES

Senator Watkins has introduced a bill into the Michigan legislature to prohibit manufacturers of motor vehicles from using the highways for speed tests of their machines. Owing to the fact that less than 2 weeks remain of the legislative session the bill is said to have very little chance along with hundreds of other measures.

The bill to compel the use of standard dies and taps in machinery, which was strongly opposed by manufacturers of motor cars, has been killed in the legislature.

AMENDING TAG LAW

The section of the police regulations of Washington, D. C., requiring identification tags to be issued for each specific motor car when brought into the District of Columbia and which has worked a hardship upon dealers who have changed their firm name since the first issue of the identification tags will be amended shortly. The new amendment will prescribe that a dealer may purchase as many identification tags as may be necessary to his business and these tags may be applied to any machines he may have for sale or which he may use in his business for demonstrating purposes. This end has long been sought by the dealers. The amendment has been passed by the corporation counsel and is now before the district commissioners.